THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[REGISTERED AS A NEWSPAPER.]

VOL. XXV. No. 621.] LONDON, APRIL 6, 1875. [27TH YEAR.] Price 6d.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis—10,000 cubic feet of gas per ton of coal; 26-candle gas; cwt. coke per ton of coal. The London Exhib in 1851 was lighted with gas made from Ramsay's C l.
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J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts and Fire-Bricks in the Kingdom. Orders for Fire-Clay Retorts of all shapes and dimensions, and to fit any shaped Mouthpiece, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.

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IMPROVED WROUGHT-IRON RETORT-LIDS, CROSS-BARS, & SCREWS;

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SOLE MANUFACTURERS OF LIVESEY'S PATENT GASHOLDER MAN-LID,

By use of which Man-lid, inlet and outlet pipes can be examined and cleansed without loss of gas in crown of holder, or ingress of atmospheric air.

ROOFS, GIRDERS, BRIDGES, AND BOILERS OF ALL KINDS.

Drawings, Specifications, and Estimates supplied on application.

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WAS AWARDED, AT THE

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THE GRAND PRIZE "MEDAL OF PROGRESS."

AT LILLE—GOLD MEDAL - - - - 1874. AT MANCHESTER—SILVER MEDAL - 1874.

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"The simplest machine of its kind."—*Engineering.*

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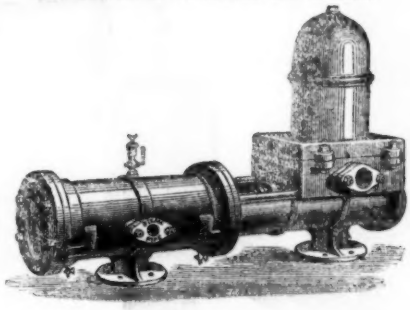
NO TAPPET VALVES OR GEAR.



IN USE IN SOME OF

THE PRINCIPAL GAS-WORKS IN LONDON, SHEFFIELD, PENISTONE, &c.,

FOR

TAR AND AMMONIACAL LIQUORS.

ONE SELECTED FROM AMONGST MANY TESTIMONIALS RECEIVED BY H. T. & CO.:—

"*Ardwick Bridge Chemical Works, Manchester, Oct.* 28, 1872.

"Sir,—The 'Universal' Steam Pump obtained from you, and which has been employed during the last six months pumping caustic soda at these works, still continues working satisfactorily,

"Yours truly,

(Signed) "PETER HART, *Manager.*"

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HAYWARD TYLER & CO.,

84 and 85, UPPER WHITECROSS STREET, LONDON, E.C.

Established

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JOSEPH CLIFF & SON,

THE ORIGINAL

WORTLEY FIRE-BRICK WORKS,

NEAR LEEDS,

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FIRE GOODS, and Salt-Glazed Drain-Pipes.

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Wharf No. 4, inside Great Northern Goods Station, King's Cross, N.;

LIVERPOOL—1, Back Leeds Street,

Where is always kept a Stock of Retorts, Fire-Bricks, Terra Cotta Ware, and Drain-Pipes.

J. T. B. PORTER AND CO.,

ENGINEERS AND CONTRACTORS,

LINCOLN, AND 1, WESTMINSTER CHAMBERS, LONDON, S.W.,

Beg respectfully to remind Gas Companies and Corporations that they continue to manufacture and supply every description of Apparatus connected with the

MANUFACTURE OF GAS AND ITS DISTRIBUTION.

GASHOLDERS, PURIFIERS, SCRUBBERS, CONDENSERS, RETORTS, &c., &c.

PLANS, SPECIFICATIONS, AND ESTIMATES FOR WORKS OF ANY SIZE.

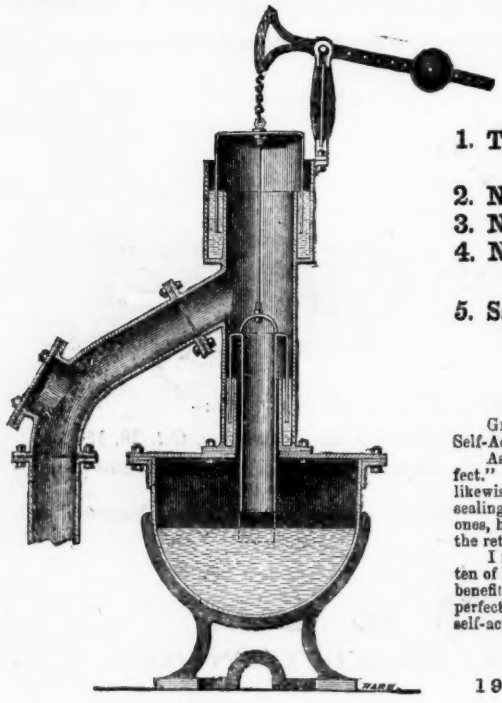
REFERENCES TO MORE THAN 500 WORKS ALREADY ERECTED.

PROSPECTUSES AND TESTIMONIALS ON APPLICATION.

SELF-ACTING REMOVABLE DIP-PIPE,

PATENTED BY

CHANDLER & STEVENSON.



ADVANTAGES.

1. There is no pressure on the Retorts.
2. No deposit of Carbon.
3. No scurfing is required.
4. Never a choked Ascension-Pipe.
5. Saves Fuel and Wear and Tear.
6. Gets 10 per cent. more Gas out of the Coal, and a higher Illuminating Power.
7. Is never out of order.
8. Requires no attention.
9. Is perfectly automatic in its action.

TESTIMONIAL.

Metropolitan District Asylum, Caterham, Surrey, Dec. 14, 1874.

MESSRS. CHANDLER AND STEVENSON.

GENTLEMEN,—I have much pleasure in bearing testimony to the complete working of your "Patent Self-Acting Dip-Pipes," which have now been in constant operation over three months.

As regards the action of the apparatus, I can describe it no better than by calling it "simply perfect." Immediately the retort is charged and the lid secured, the small holder rises, which lifts the Dip; likewise the instant the gas is permitted to escape at the mouthpiece the holder falls, thus perfectly sealing the Dip. I am fully convinced of the superiority of these Self-Acting Dips over Non Self-Acting ones, having experienced the fact that stokers do occasionally neglect to unseal the Dip after charging the retort, thereby causing a waste or loss.

I feel that it is quite unnecessary for me to say more on the subject, excepting that, having had ten of Messrs. Chandler's Dip-Pipes in use more than one year, and having experienced the great benefits derived thereby, inasmuch as the yield of gas from the coal is greatly increased, and the retorts perfectly free from carbon and other advantages, and seeing that the same Dip has been made perfectly self-acting by the second patent, I feel convinced that this is the right thing.—Yours obediently,

W. CRICKMAY, Resident Engineer.

For terms of use and cost, apply to Mr. G. W. STEVENSON,

19, GREAT GEORGE STREET, WESTMINSTER.

MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, NEAR SHEFFIELD.

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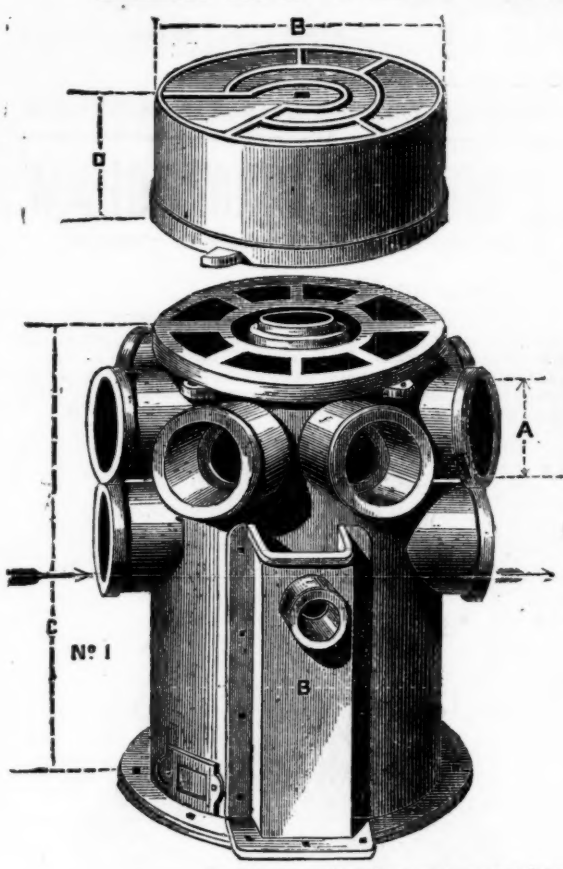
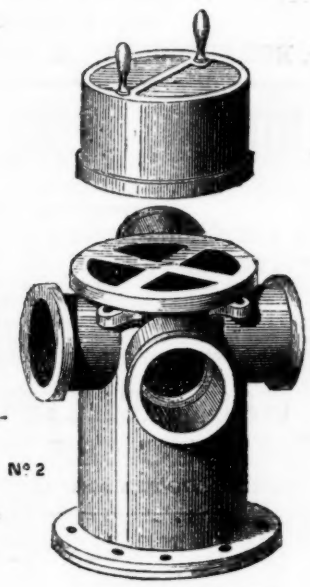
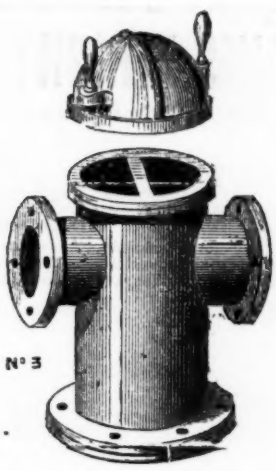






THORNCLIFFE
IMPROVED BYE-PASS VALVE.
SIZES FROM 3 INS. UPWARDS.

THORNCLIFFE
IMPROVED STOP-VALVE.
SIZES FROM 3 INS. UPWARDS.

Sizes of the THORNCLIFFE IMPROVED CENTRE-VALVE.

	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
A. Bore of Pipe. . .	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..	12
B. Diameter of Body.	16 ..	20 ..	23 ..	26 ..	28 ..	31 ..	34 ..	40
C. Height of Tank .	33 ..	35 ..	38 ..	43 ..	46 ..	48 ..	51 ..	56
D. Depth of Cover .	8 ..	9 ..	10 ..	11 ..	12 ..	13 ..	14 ..	16
Total Height . .	44 ..	44 ..	48 ..	54 ..	58 ..	61 ..	65 ..	72

In all cases the Covers are cast heavy enough to resist any required pressure.

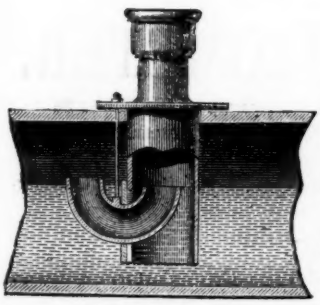
The advantages derived from the adoption of these Valves are so manifest and cardinal that in the immediate character of the change—the simplicity of the machine—the facility affording for cleaning out connexions between Valve and Purifier—the perfect collection and delivery by suitable overflow of the ammonia, at a greatly diminished depth from ground-line over the old form of Valve—the advantage of connecting on the same level, and at any angle, or opposite to each other, the inlet and outlet pipes without dip or rise—the clear acquisition of space in the purifying-house, by being able to place the boxes nearer together, the new Valve being entirely under the floor—and lastly, though of the greatest importance, the passage of crude and unpurified gas during the change is minimized to the merest fraction, thus preventing the fouling by impure gas the delicate machinery and easily affected exposed movements of the station-meter, thereby preventing the introduction of the enemy (unpurified gas) into the gasholder. Also a dead abutment is offered to all back pressure, imparting thereby to the gauges, governors, and hydraulic seals, a steadiness of action never realized with the once famous, but now fast becoming obsolete, Hydraulic Centre-Valve.

N., C., and Co. also Manufacture and Erect

PURIFIERS, CONDENSERS, SCRUBBERS, GASHOLDERS, ROOFS,

And every description of Gas Machinery.

TENDERS GIVEN FOR WORK FIXED COMPLETE IN ANY PART OF THE KINGDOM.



Messrs. N., C., and Co. are also the Sole Agents for

HAWKINS' PATENT SELF-ACTING HYDRAULIC DIP-PIPES.

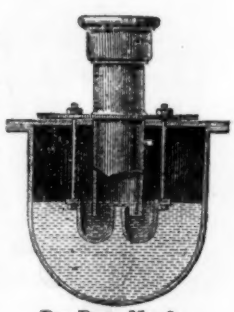
By their use the whole of the pressure caused by the Seal in the Hydraulic Main is entirely avoided, thus securing the many advantages long sought for.

Over 50 Gas Companies have already been supplied with them, many of which have been using them throughout their entire works continuously for over two years.

They can be applied to existing Hydraulic Dips, and at a very small cost.

They seal themselves in the same manner as the ordinary dip-pipes, therefore they are not likely to get out of repair.

By the aid of the adjusting screws they can be made to work on the old principle at pleasure.



DIP-PIPE, No. 1.

FOR PRICES, TESTIMONIALS, &c., APPLY TO

DIP-PIPE, No. 2.

Messrs. NEWTON, CHAMBERS, & CO., Thorncliffe Iron-Works, near Sheffield, Sole Agents;

OR TO THE PATENTEE,

J. G. HAWKINS, NEEPSEND GAS-WORKS, SHEFFIELD.

TO GAS AND RAILWAY COMPANIES, LOCAL BOARDS, ENGINEERS, CONTRACTORS, SHIPPERS, &c.

WILLIAM KEEN,

SOLE PROPRIETOR AND MAKER OF

KEEN'S PATENT DOUBLE-FRAME CLIP-LAMP,

AND MANUFACTURER OF

EVERY DESCRIPTION OF STREET-LAMPS.

FOR PARTICULARS, APPLY TO

W. KEEN, 23, ROBERTSON ST., & 5 & 6, PRIORY STREET, HASTINGS, SUSSEX.

JOHN WRIGHT AND CO., ESSEX WORKS, BIRMINGHAM,

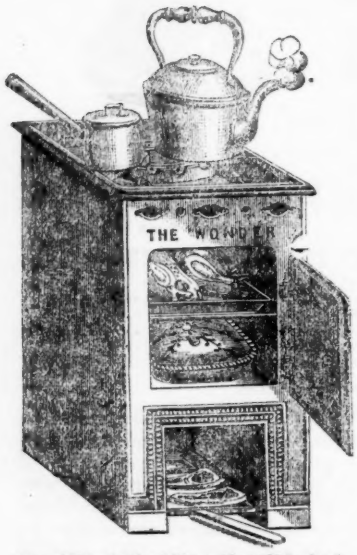
Beg to call the attention of MANAGERS and DIRECTORS of GAS COMPANIES to the following letter which they have lately received.

COPY OF LETTER RECEIVED FROM MAGNUS OHREN, Esq.

To Messrs. John Wright and Co., Essex Works, Birmingham. *Crystal Palace District Gas Company, Lower Sydenham, S.E.*

Dear Sirs,—In reply to your inquiries, I am glad to state that the use of GAS COOKING AND HEATING STOVES has been a complete success here. We have several hundred in use in our districts. We also find it advantageous to let out Stoves at a small rental. We have now 275 Stoves at rent.

The Stoves you make I can with confidence recommend, having so many in use, and giving satisfaction. I need scarcely point out to you the advantage to Gas Companies to recommend the use of Gas Stoves to their Gas Consumers, even where they do not supply them on sale or rent, as the use of Gas Stoves brings day consumption, and thus the Company make a profit by day as well as by night.—I am, dear sirs, yours faithfully, MAGNUS OHREN.



Size, 25½ in. high; 14 in. wide; 12½ in. back to front.

Price 50s., complete with Pan and Gridiron.

GAS HEATING STOVES

(TERRA COTTA AND IRON).

THE CHEERFUL STOVE.

COOKING STOVES.

BREAKFAST COOKERS.

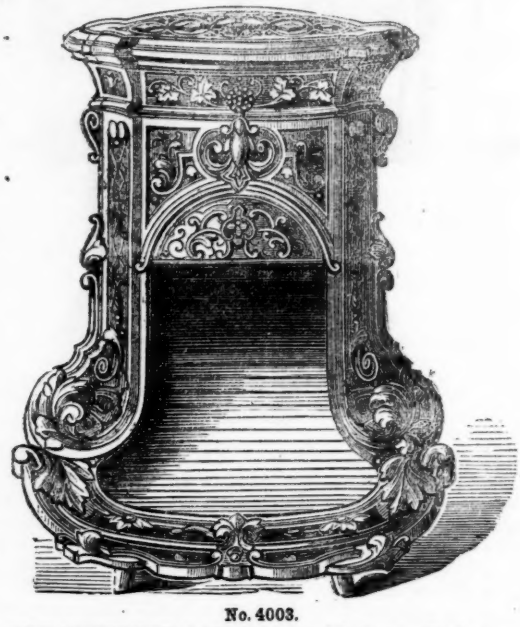
BATHS HEATED by GAS

GAS STOVES

For Boiling, Broiling, Preserving, Heating Flat Irons, and for all other Domestic Purposes.

Gas Companies and the Trade who have not our Illustrated Catalogue are respectfully requested to apply for same.

A LIBERAL DISCOUNT to the TRADE.



No. 4003.

THE CHEERFUL GAS STOVE, with Copper Reflector,

Has all the appearance of a Bright Fire.

PRICE from 32s.

PRIZE MEDALS—1862, 1867, 1871, 1874.

SYDNEY LEONI & CO.,

Sole Licensees and Agents for the United Kingdom of Great Britain for

GIROUD'S PATENT RHEOMETER.

This Instrument is easily fixed under any Burner; it regulates the volume of the Gas to be consumed, notwithstanding the Size of the Burner or the Variation of Pressure.

Full particulars on application, also PAMPHLETS on the "Advantages of Heating and Cooking by Gas," with Illustrations, &c., of the latest and most improved

"CHEERFULS,"

And other new Patent Heating Stoves under China and Terra Cotta Covers.

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SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH

HOLMAN'S PATENT ECCENTRIC FASTENINGS,

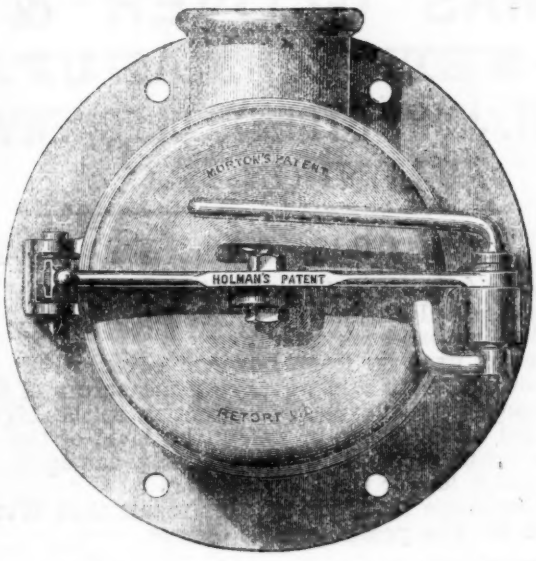
ANTI-FRICTION CATCHES, AND NEW SELF-SUSTAINING CROSS-BARS.

NO LUTING.

NO DUPLICATE LIDS REQUIRED.

INSTANTANEOUS SEALING EFFECTED.

VERY DURABLE.



HOLMAN'S NEW SELF-SUSTAINING CROSS-BAR ENSURES FREEDOM OF JOINT, AND MAINTAINS PARALLEL POSITION OF THE LIDS.

Since their introduction in 1869, these Patent Retort-Lids have been thoroughly tested (rigid cast iron is now successfully employed), nearly 15,000 being in use at various Gas-Works in London and the Provinces, among which may be mentioned:—

The Gaslight Co., Beckton (where, by the end of 1875, nearly 4000 will be in use).
" Gaslight Co., Bow Common.
" Gaslight Co., Silvertown.
" Gaslight Co., Lupus Street.
" London Gaslight Co.
" Independent do.
" Phœnix do.
" South Metropolitan Gaslight Co.
" Commercial do.
" Imperial do.
" West Ham Gas Co.
" Gas-Works, Barnet.

The Gas-Works, Royal Arsenal, Woolwich.
" do. Lower Sydenham.
" do. Brentford.
" Consumers Gas Co., Woolwich.
" Alliance and Dublin Gas-Works.
" Edinburgh do.
" Manchester Corporation do.
" Salford do. do.
" Rochdale do. do.
" Liverpool Gas-Works.
" Birmingham do.
" Birkenhead do.
" Nottingham do.

The Newcastle-on-Tyne Gas-Works.
" Lurgan do.
" Carmarthen Gas-Works.
" Merthyr Tydfil do.
" Windsor do.
" Leeds do.
" St. Albans do.
" Over Darwen do.
" Rotherham do.
" Aylesbury do.
" Bournemouth do.
" Ystrad do.
" Cardiff do.
" Rochester do.

The Keighley Gas-Works.
" Aberdare do.
" Ballymena do.
" Richmond do.
" Stalybridge do.
" Longton do.
" Exeter do.
" Ross do.
" Falmouth do.
" Barrow-in-Furness do.
" Belfast do.
" Wakefield do.
And other Provincial and Foreign Gas-Works.

IMPORTANT TESTIMONIAL.

The Gaslight and Coke Company (Commonly called the Chartered Gas Company), Beckton, North Woolwich, July 2, 1874.

MESSRS. TANGYE BROTHERS AND HOLMAN.

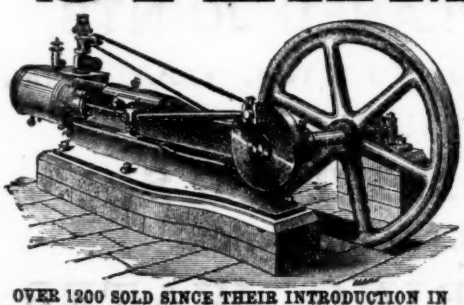
Gentlemen,—In answer to your inquiry respecting the Self-Sealing Lids, I beg to say that they continue to work well, and I have every reason to be satisfied with them.

I should be very sorry to return to the old system of Luting, and our stokers here freely acknowledge the benefit to them of the new system.

I am, yours truly,
(Signed) G. C. TREWBY.

TANGYE'S HORIZONTAL HIGH-PRESSURE EXPANSIVE

STEAM-ENGINES.



OVER 1200 SOLD SINCE THEIR INTRODUCTION IN DECEMBER, 1869.

In designing this Engine the utmost regard has been paid to simplicity of arrangement, strength of construction, and economy in cost. The working parts are considerably reduced in number, as compared with Horizontal Engines generally, rendering it far more durable and compact, the bed-plate, front cylinder cover, guides, and plummer-block for crank-shaft bearing being all cast in one piece, which in design and proportions is admitted by competent engineers to be perfect, and to afford a strength and rigidity that cannot possibly be attained in the best fitted engines of the ordinary horizontal type. The extraordinary stiffness of this Engine will permit of its being driven at a much greater maximum speed than engines generally, and with far less wear and tear. The cylinder with its valve-chest is bolted to the end of the bed. The cross-head slippers and connecting-rod ends are made adjustable, so that any wear can be readily taken up. The fly-wheel, cylinder-end, connecting-rod, and crank-plate, are all bright. All the parts are made to Whitworth's Gauges, and the material and workmanship are of the highest class throughout.

The Governor is of a very special description, and combines in the small space usually occupied by the ordinary steam stop-valve, a governor, throttle-valve, and stop-valve complete. It is exceedingly sensitive, simple, and compact.

These Engines are adopted in Gas-Works at Haggerston (Independent Gas Company), Nine Elms (London Gas Company), Falmouth, Harrow, Jersey, Plymouth, Richmond, Rochdale, Santiago (Chili), &c.

London 1851. New York, 1853. Paris, 1855. London, 1862.

Dublin, 1865. Paris, 1867.

The SIX MEDALS AWARDED to THOMAS GLOVER for

PATENT DRY GAS-METERS,

The latter being the Highest Medal awarded for Dry Gas-Meters by the Imperial Commissioners for the Universal Exhibition, Paris, 1867.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

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LONDON, E.C.

THOMAS GLOVER & CO.'S PATENT DRY GAS-METERS,

1st, Are a remedy for all the defects of Wet Meters;
2nd, Are suitable for all climates, whether hot or cold;
3rd, Incur no loss of Gas by evaporation;
4th, Cannot become fixed by frost, however severe;
5th, Are the most accurate and unvarying measurers of Gas;
6th, Prevent jumping or unexpected extinction of the Lights;
7th, May be fixed either above or below the level of the Lights;
8th, Cannot be tampered with, without visibly damaging the outer case;
9th, Will last much longer than Wet Meters;
10th, Will not cost more than one-half for repair that Wet or Water Meters do;
Are upheld for five years without charge.

WILLIAM PARKINSON & CO.,

(SUCCESSORS TO SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

MANUFACTURERS OF PATENT

WET & DRY GAS-METERS,

STATION-METERS WITH PLANED JOINTS,

GOVERNORS, PRESSURE REGISTERS, GAUGES,

AND EXPERIMENTAL APPARATUS.

STREET-LAMP METERS,

AND REGULATORS FOR AVERAGE METER INDICATION.

METERS FOR MEASURING WATER.

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TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, APRIL 6, 1875.

Circular to Gas Companies.

THE motion to be made by Sir Charles Adderley to-night, for a reference of all the Metropolitan Gas Bills to one select committee, will, no doubt, be adopted, and the fight will soon commence. Colonel Beresford has, we presume, withdrawn his motion for the rejection of the Regulations Bill, in deference to the wishes of the Government, who evidently intend to let the measure follow its natural course. The Bill will, therefore, most probably, be read a second time this evening, and in a few days we shall know the constitution of the select committee. We have before hinted our belief that the Board of Trade had in contemplation a general measure, which, adopting the principles of the legislation of 1868-69, would further provide facilities for amalgamation, as suggested in the important letter of Mr. Farrer. To such a measure the companies would, of course, offer no opposition. It would be fruitless if they did; but there could be no occasion for it. For the sake of metropolitan gas consumers and ratepayers, we could wish that this evening we may hear that it is the intention of the Government to take the gas question in hand. A brief announcement of this intention on the part of the Government, brought into power to put a stop to the "harassing of every "trade and industry in the country," would have the immediate effect of preventing the utter waste of the enormous sums, which must be expended, if the struggle, which now looks imminent, be entered upon.

The determination of the metropolitan companies is made clear. The half-yearly reports, now in course of publication, announce the resolution of all directors to offer the most strenuous opposition to the Bill, which, if it became law, would be virtually an Act of confiscation. We repeat our assertion, that there is not a metropolitan company which can continue to supply gas at the price proposed in the Bill, and pay the dividends which Parliament have over and over again guaranteed; and the proposal to reduce the dividend, if that price be exceeded, is one which, in face of the guarantee we have named, cannot be entertained.

It is quite on the cards, however, that, seeing the determined front the companies offer, the Corporation of London and the Metropolitan Board may be convinced of the hopelessness of their attempt, and, at the last moment, withdraw the obnoxious measure. They were never very sanguine about its success, and to-day, we imagine, are less hopeful than ever. And now that every vestry and District Board in the metropolis is in a state of alarm at the continually increasing demands of the Board, we think they may hesitate before they add a few more thousands to those they have already recklessly thrown away on this question. For our own part, we may say that we shall go before a parliamentary committee with the utmost confidence; but, for the sake of the metropolitan gas consumers and ratepayers, as said above, we hope that better counsels will, at the last moment, prevail with the Metropolitan Board.

We must confess that it is with some reluctance that we fulfil the duty of publishing the speech made by the governor of the Chartered Company at the recently held half-yearly meeting. That he should be very indignant at the accusations brought against him, was natural; that he would repel them in strong terms, was to be expected. But what we regret is, that, in setting forth the facts relating to the purchase of the land, at what is now very appropriately called Beckton, of the Ironmongers Company, the governor should have indulged in personalities which were scarcely merited. Mr. Newton, we believe, made no accusation on his own account. He simply wished to turn the tables on his antagonist, Mr. Leslie, whom we receive with joy as a repentant sinner. This latter gentleman was, at one time, as all will remember, a somewhat violent opponent of the gas companies; but he has seen the error of his ways, and now, like all converts, is an earnest proselytizer. Mr. Newton will, we hope, in time, undergo a similar change, and will presently see that to undo the work of previous gas legislation would be an act of gross injustice.

The report of the Commercial Gas Company for the past half year is a very satisfactory document. The directors are able to declare maximum dividends out of the profits of the half year, and are able to carry over something more than £4000. But slight reference, it will be seen, is made to the Bill promoted for effecting amalgamation with the Ratcliff Company. In the absence of any general measure promoted by the Board of Trade, the Bill will probably be successful, although the Chartered Company may make a strong point against the necessity for new works.

We are reminded here of the answer made by the governor of the Chartered Company to a shareholder, who wished to know whether overtures for amalgamation had been made to any companies. Of course they have, but it seems that some of the companies to whom the proposal was made desired preference maximum dividends, as was agreed to in the case of the Great Central Company. It would be useless, we believe, for any arrangement of the kind to be made between companies; for we feel satisfied that the Legislature or the Privy Council, as may be, would never ratify such a compact. The case of the Great Central Company and the circumstances attending the amalgamation were perfectly unique. It was a competing company, within a limited and most important district, and the directors were thus able to make their own terms. There is no company to-day at all in the same position; and whatever amalgamations now take place, the companies can only unite on equal terms. We are glad that hopes of some further amalgamations may still be entertained; but we are sorry to think that a great advantage has been lost by delay. If the hint given by the Government had been immediately acted upon, they must have come to the support of the companies. As it is now, though we have no fear of the final result, we look forward to the possible action of the Government with some anxiety.

The Surrey Consumers Gas Company have also had a successful half year's working. They can pay full dividends out of profits, and carry forward upwards of £4000. The directors in their report express a belief that there is "considerable danger" in the present crisis. We do not share the opinion; but the directors are perfectly right in calling the attention of the shareholders to the nefarious designs of the authorities.

The Phœnix Company, we see, come off with little more than "the skin of their teeth." They are able to pay a maximum dividend out of profits; but have only a little over £1400 to carry to the reserve-fund. This result has been obtained with gas at 4s. 2d. For three months of the current half year the price will be 4s. The report calls attention to the fact that coals are still 30 per cent. dearer than in 1872, and expresses the intention of the directors to offer the most strenuous opposition to the Regulations Bill, which, if carried, would most certainly, as the report says, be "highly detrimental to the interests of this company."

In our comments last week, we did not do full justice to the Dublin and Alliance Gas Company. When allusion was made to the overhauling of mains, it should have been mentioned that this company have, perhaps, the lowest rental per mile of any undertaking in the kingdom, certainly a lower rental than of any other undertaking at all approaching it in magnitude. It only averages, we believe, £500 per mile, and there are miles of mains on which there are but a few public lamps. Coal, too—that is, Newcastle gas coal—it should be remembered, is dearer in Dublin than in London, in consequence of the heavier freight. The half-yearly meeting which we report in another column, of course, passed off very pleasantly.

The Corporation of Halifax have done fairly well with their gas undertaking in the past year. The net profit, when a sufficient sum has been put aside for depreciation, it is true, is only £5459, which is, however, quite enough for a Corporation to make. When these bodies take to trading and manufacturing concerns, they must, of course, accept all the risks. The same misfortune has befallen the Corporation of Halifax as befell the Chartered Company, in the case of Savile House, and the Great Central, in Wood Street, Cheapside. The Corporation have to pay £34,000 for the destruction of Messrs. Lister's mill, which will swallow all the gas profits, at the above rate, for years to come.

We hope the report of the manager of the United Company, which we publish in another place, will satisfy the Corporation of Liverpool that the company honestly fulfil all their obligations. We have the greatest respect for the borough engineer, who, without being at all conscious of it, may be somewhat biassed on this question, and we think he will be the first to admit that Mr. King's reply is conclusive. It is not to be expected, however, that this report will at all affect the proceedings of Dr. Cross's committee, who would appear to have made up their minds that the Corporation shall have possession of the undertaking. They have not commenced operations in a pleasant way. It would have been much better if they had made a fair offer to purchase on the usual terms.

We mentioned, a week or two ago, that a consumers meeting had been held at Birmingham, at which a committee was appointed, to obtain from the gas company an explanation of an alleged mysterious and sudden expansion of the registering powers of their meters. A correspondence has taken place, and the company explain that the increased registration is, doubtless, due to increased consumption consequent upon the exceptionally cold and dark weather. It is further mentioned that the real quantity registered by the consumers meters, corresponds with the gas made and measured in bulk at the works; and the directors add that they know of no mode of interfering with the measurement or registration of the meters, each of which has been tested, and stamped by the Corporation, as a guarantee of its correctness. We very much fear that this undoubtedly true explanation will not satisfy the dissatisfied consumers at Birmingham, and elsewhere. Gas is such a mystery to the general public, and mendacious agitators have instilled so much falsehood into the public mind, that we can hardly wonder at simple-minded people believing they are cheated. It is of no use explaining, and gas companies must content themselves with the approval of their consciences, and the powers they have to recover just debts.

Water and Sanitary Notes.

On Friday last a deputation from the Social Science Association had an interview with the President of the Local Government Board, to urge the advisability of appointing a Royal Commission to inquire into the means of supplying water over the whole United Kingdom. The President seemed to be somewhat alarmed at the extent of the inquiry suggested, and asked for further information as to specific points to which inquiry might be directed. This has been promised, and we shall presently learn what the association deem it desirable to know. A Royal Commission might roam over the kingdom for an indefinite number of years, boring here, gauging rainfall there, mapping out the country into proper areas for water supply and drainage, and publishing Blue-Books innumerable, which few would read. But is not the information they would collect for the most part at hand? Is not the geology of the country well understood? Are not the water-bearing strata well known? Are we not well informed as to the rainfall? and have we not Ordnance maps? A Royal Commission is not needed to ascertain where a scarcity of water exists. The fact is always well known to the local authority of the district; and if they cannot, or will not, remedy the grievance, a Royal Commission will not make them. While, then, admitting that some action may be desirable, we must altogether object to a Royal Commission, with all the inevitable expenses. We have had enough of them. We had a Royal Commission on the water supply of the metropolis, who very properly left things exactly as they were. We have had two Rivers Pollution Commissions, and it is not easy to see what will ever come of their labours.

Mr. Michael, in his able address, pointed out that sometimes the opening of a coal mine drained a whole district, and left the inhabitants a very scanty supply of water. The remedy in such a case is surely easy, if the local authorities are energetic and enterprising. Worse cases were mentioned by Mr. Bailey Denton; as, for instance, where villages are actually robbed of their water—there is no other name for it, although it is done under parliamentary sanction. This gentleman, as our readers know, recommends the storeage of rainfall as a remedy against scarcity, and we quite approve of his plan. We have before expressed our belief that our subterranean sources are failing; it must be so, in fact. The collection of the water that falls from the clouds becomes, then, an imperative necessity. No one ought to knew better than Dr. Farr, that to calculate the quantity of water that falls, and the amount which can be collected and stored, is a simple arithmetical problem, within the capacity of any ordinary schoolboy, with well ascertained data on his slate. How much is needed is known to everybody who has devoted any consideration to the matter. To a strong advocate of centralization like Dr. Farr, it may be, or most likely is not, a question, whether the administrative portion should be left to the towns, or whether there should be a general administration. That some control might be exercised with advantage over the scrambles for water which take place in Parliament, we are quite ready to admit; but, granting that a parliamentary committee, sitting in Westminster, is possibly the very worst authority to decide on the merits of a water scheme for the supply of a distant portion of the kingdom, it is, at all events, a constitutional tribunal. We are sorry to have to allude to the figure cut by the medical members of this deputation. Dr. Sandwith repeated the rubbish he has written to *The Times*, and Dr. Guy urged that it should be made a misdemeanour to construct a cesspool! When will medical gentlemen learn that, if they wish to be listened to, they must talk sense? The intellectual condition of the laity has greatly changed since doctors wore wigs, talked egregious nonsense in solemn tones, and walked about with tall gold-headed canes. The reply of Mr. Sclater-Booth showed that he was fully alive to the importance of the matter brought before him, and possessed a good acquaintance with the whole subject. In the course of his answer he made the following observations, which express no more than the truth. In the recent water famine it was, with a few exceptions, only corporate undertakings which failed:—

> Questions having relations to this subject had been a little mixed up, he thought, by the different speakers, and one or two which were not so directly concerned in it as might at first sight appear. The question of interfering with the water companies would add to the difficulty of an inquiry, and he would say that, whatever might be the question or views regarding the monopoly in the supply of a necessary of life, the fact stood, that those places which were supplied by water companies were better off for water than other places. What was necessary was that those parts of the kingdom where there was no provision should be looked to.

We alluded last week to the difficulties and the enormous expenses to which the Corporation of Blackburn have been put respecting the ultimate disposal of their sewage, and we see now that they are about to make an appeal to the Home Secretary for some sort of protection. What they wish for we do not exactly know; but we seriously believe that the financial circumstances of the northern Corporations offer matter for very grave consideration. They seem to be gradually awakening to a sense of their position. They have been incurring enormous debts for town-halls, for improvements, for gas and water undertakings, and now it is brought home to them that the next quarter or half century may see a sad change in their condition. Bradford is just now much exercised on this score. They have a debt of upwards of four millions, and a large addition will have to be made to it, unless, as a local organ puts it, "the aspect "of trade frightens Parliament from enforcing the purification of "rivers." We do not exactly share Mr. Greg's alarming opinions, but there is a possibility—nay, even a strong probability—that the next fifty years will witness a very important change in the condition of our leading manufacturing industries, by which these northern towns will be most disastrously affected. They will do well, then, to contract their liabilities as far as possible, as recommended at Bradford. At Halifax, too, some alarm is evidently felt, and at a recent special meeting of the Town Council, the chairman of the Finance Committee (Mr. Whitley), at the close of a most able speech, portions of which we hope to find room for next week, urged upon his colleagues the necessity of imposing every possible check on the expenditure. The sinking-funds are, in fact, crushing the ratepayers, and any great disturbance of trade would reduce half the Corporations in the kingdom to bankruptcy.

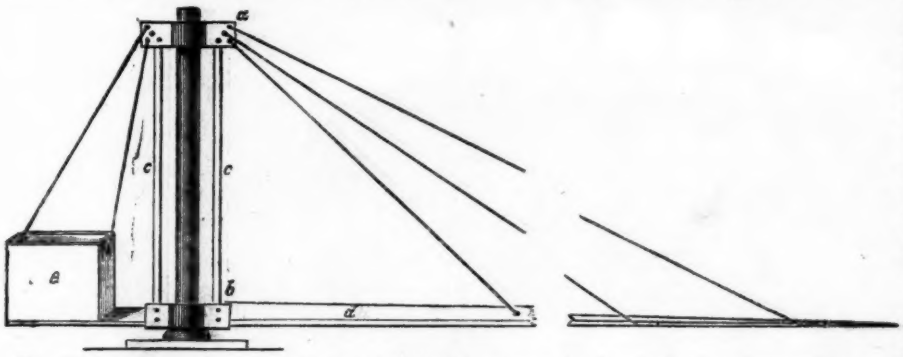
A TREATISE ON THE SCIENCE AND PRACTICE OF THE MANUFACTURE AND DISTRIBUTION OF COAL GAS.

LVIII.

GASHOLDERS.

It may be now fairly concluded that gasholders have at length reached their utmost magnitude, inasmuch as in all the modern excellent structures of this nature, designed by engineers of the greatest skill and intelligence, alike in works of the largest denomination as in those of less pretensions, the capacity of these vessels has been retained within the limits adopted 14 years ago, about which period gasholders capable of containing 2,500,000 cubic feet. were first constructed. From that time, although several similar vessels have been constructed, we believe this capacity has never been exceeded; we may assume, therefore, that the greatest desirable magnitude in these vessels has been attained. As we proceed, we shall be enabled to present to the notice of the reader a brief account, together with specifications, of the construction of various holders and tanks, commencing with the smallest description generally employed in works, and progressing to those of the largest dimensions, and of some which have presented the greatest difficulties in erection.

The first operation in the construction of a tank is the excavation. This, in vessels of limited dimensions, is practised, at the present day, precisely in the same manner as 40 years ago. But with tanks suitable for large holders, similar to those referred to, which sometimes contain upwards of 20,000 tons of water, the steam-crane, trams, derricks, caissons, and other extraordinary appliances become indispensable, and, without these means, the gigantic undertakings of modern times could hardly be successfully carried out.



Formerly the excavation was made to the desired depth over the whole area, but the modern practice in erecting large tanks is to excavate an annular space, which is securely shored, to the depth of the required foundations for the wall. The foundations, or footings, are then constructed, and the wall is carried up to the desired height. This accomplished, the ground in the centre is dug out, leaving a dome or cone (the former being preferable, as it possesses all the strength of the arch), the dimensions of which are controlled by the nature of the site; for, if it be of gravel or sand, then, on account of their angles of repose, the cone or dome will be limited in height, but if good hard ground, it can be carried up to any desired elevation. In sandy or soft soil, and, indeed, in all uncertain ground, it is necessary to concrete over the whole of the area, and to render this with cement, or to lay one or two courses of flat tiles or bricks, in order to prevent leakage. Sand is never to be relied on as a foundation, unless when existing under water, and this entirely free from a current of any kind. The foundations being properly prepared with good cement, or hydraulic mortar, in the course of time they become like a solid rock, and ensure perfect stability for the construction. Again, there are other sites where the ground is so firm and solid as only to require care in the building, and, as already stated, when the excavation is in good plastic clay it is sufficient in itself to retain the water.

The excavation made, the circle of the wall is defined by carefully prepared wooden templates, made according to the curvature of the tank, and as one part is built, the template is carried round from place to place until the circle is completed. The plan adopted by the writer for such work is to place in the centre of the proposed tank, what the workmen term, a compass, which purpose it really serves, as represented in the drawing, where, for economy of space, a part of the apparatus is shown as broken away. This consists of a 4-inch pipe, placed in a vertical position, and leaded into a socket, which is attached to a wide base, this base being secured to stakes driven into the ground. Two collars, *a* and *b*, are provided with two broad flanges, each bolted to the bars *c c*, of 5 or 6 feet in length. The collars and frame revolve freely on the vertical pipe, but have as little play as possible. To one of the flanges of the collar, *b*, is bolted a light wooden bar, *d*, tapering towards the end, of a length equal to the radius of the tank, and in section representing the letter T. This bar is suspended by three or more rods to the flange of collar, *a*, so as to retain it always in a horizontal position, and is counterbalanced by weights placed in the box, *e*, which is attached to flange of collar, *b*, and suspended to flange *a*. The apparatus as arranged can be turned round with the greatest facility to any desired point, and sometimes, when it is likely to interfere with the scaffolding, a portion of the end is provided with a hinge, so that it can be folded up out of the way when required. Exactly at the distance of the radius of the tank a hole is pierced in the wooden bar, and from this is suspended a good pointed plumb, which can be raised to any desired point as the work progresses. By this means the cylinder can be assured even to the eighth of an inch, for the apparatus not only serves as a compass, but also that of a plumb, so that, one man being employed in setting the work at various points, the others follow with the templates. Nor is it limited alone to this purpose, but, in the construction of the cone or dome in the centre, with a wooden template, corresponding to the dome, one end of which is fastened to the flange, and the other resting on the footings of the wall, the excavation can be made with the most unerring exactitude. The simplicity and certainty of the apparatus, its moderate cost, the saving of time and labour effected by it, are all strong recommendations to its use; and, whether employed for tanks of the most limited dimensions, or those of the greatest magnitude, it is alike suitable, the only consideration being to have the apparatus made in accordance with the dimensions of the tank.

Hitherto the system generally adopted in works treating on gas lighting has been to give a number of specifications for gasholder-tanks, without any reference whatever to the ground in which they are to be erected; but as the nature of the substratum must always govern the manner of construction, this system is unquestionably erroneous. The rule has been to indicate a given thickness of concrete or puddle to be employed, under all conditions; but if we consider that a tank, which would be well adapted for a clay soil, would be quite unsuitable for sandy ground, and that a hard, rocky site would require a construction differing altogether from either of the two first mentioned, the inapplicability of such a rule is evident.

The position assumed by the writer when disputing the necessity for puddle in the construction of holder-tanks, will, in all probability, meet with opposition from many engineers, who have been in the constant habit of employing it. Its use is, moreover, supported in a standard work on gas lighting, in such a manner as to lead to the impression that it cannot be dispensed with. That puddle is an infallible remedy for bad workmanship or material, or for leaky tanks, there can be no question, but it is often very costly, and, in many localities, cannot be obtained at any price; therefore, if good tanks can be constructed without it, a progressive step in gas engineering is taken.

It may be observed, that the writer's opinion on the subject was forced upon him by circumstances; for having, in the course of his experience, to construct holder-tanks of various materials, in sundry places, and in all kinds of soil, he was compelled, in the absence of plastic clay, at first against his will, to dispense with it; and although he has constructed many tanks, varying from 30 to 90 feet in diameter, and from 12 to 30 feet in depth, he never employed a single yard of puddle; moreover, he can conscientiously say that he never had a leaky tank. One of the elements of his success was having good hydraulic mortar or cement; another, that the work was properly executed without stint of cement, as from deficiency in these respects, more than from any other, arises imperfect work in the structures in question.

(To be continued.)

HULL GAS SUPPLY.—Mr. Baynes reports that the illuminating power of the gas sent into the district of Soulcoates and Myton by the British Gas Company during March was satisfactory; free ammonia and sulphuretted hydrogen were at no time present to the ordinary tests. The results for the month are—

	Max.	Min.	Mean.
Illuminating power standard sperm candles	16·84	15·60	16·11
Grains of sulphur per 100 cubic feet. . .	34·00	27.60	30·00
Grains of ammonia per 100 cubic feet . .	—	—	·50

Mean barometer and temperature in experiment-room:—Bar., 30·20; tem. 57°. The gas supplied to the east district by the Sutton, Southcoates, and Drypool Gas Company possessed satisfactory illuminating power. Free sulphuretted hydrogen was at no time present to the ordinary tests. Ammonia was, however, present in traces. The sulphur impurities were fairly low.

	Max.	Min.	Mean.
Illuminating power standard sperm candles	16·46	15·95	16·18
Grains of sulphur per 100 cubic feet. . .	—	—	16·48

Mean barometer and temperature in experiment-room:—Bar., 30·29; tem. 50°. The apparatus for the estimation of ammonia not yet complete.

BURSTING OF A WATER-MAIN IN LIVERPOOL.—On Saturday, the 27th ult., about two o'clock in the afternoon, the 24-inch water-main, which is laid along Dale Street, suddenly burst at a point opposite the municipal offices. A large volume of water forced its way to the surface, issuing from the broken main in such a stream as to upheave the paving of the street for an area of many yards. The whole of the thoroughfare was soon inundated to the depth of about a foot in some places, the water rushing in a torrent down hill, along Sir Thomas's Buildings and Great Crosshall Street, and escaping down the sewer traps. It was some time before the flow could be stopped, and, meanwhile, to prevent accident, Major Greig got a number of long ladders from the fire station in Hatton Garden, and a number of poles, which were placed across the street, and until the water was effectually turned off no traffic of any description was allowed to pass. The supply of water being stopped, a number of men were set to work to repair the damage, when quite 15 yards of the centre of the street had to be taken up, and the tramway cars were not able to pass that way until the following morning. The pipe that burst had been down for 12 years. Fortunately, no damage of much account took place, which was not the case when the water-main burst some years since at the top of Water Street. Then the cellars in the Back Gorse were nearly all flooded, and it took days to pump some of them out, the damage done extending to hundreds of pounds.

Communicated Article.

THE LIGHTING, WARMING, VENTILATION, AND WATER SUPPLY OF THE NEW OPERA HOUSE AT PARIS.

(FROM OUR PARIS CORRESPONDENT.)

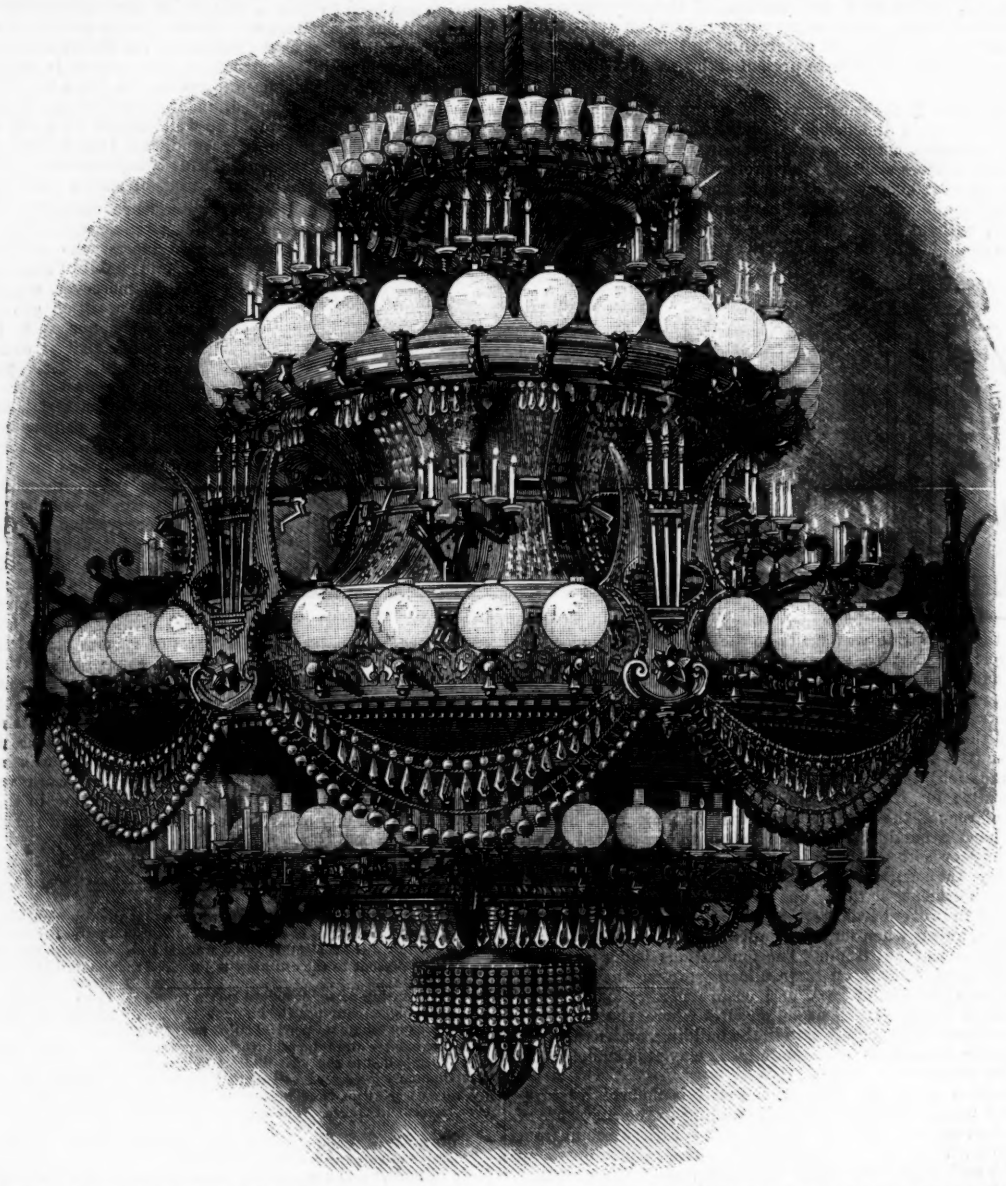
(*Continued from page* 401.)

THE LIGHTING OF THE THEATRE.

On entering the theatre, the attention of the visitor is at once attracted to the magnificent entablature, surmounting which is the splendid ceiling of copper, painted by Lenepven, the subject being intended to represent the hours of the day and night. This entablature is ornamented with a row of gas globes, which, when lighted, have the appearance of an immense girdle of pearls. In the friezes are placed open-work medallions, filled in with various kinds of imitation precious stones, and when these are illuminated by the gas, they have all the effect of a diadem of topazes and emeralds. This original mode of illumination is completed by the magnificent central chandelier, the beautiful crystals of which—representing, so to speak, the diamonds in this gorgeous jewel-case—dart their fire over the entire area of the theatre, and gladden every eye.

This chandelier is truly a remarkable one. Its shape is simple yet grand, and its lights are admirably arranged. After several modifications and enlargements, necessitated by the insufficiency of light produced on the day of inauguration, the chandelier now comprises 112 globes and 444 candle lights; in all, 556 burners It was constructed according to designs furnished by M. Garnier himself, the execution of the work having been undertaken by MM. Lacarrière, Delatour, and Co., who have certainly bestowed upon it a considerable amount of care. These gentlemen have, indeed, made a certain pecuniary sacrifice in undertaking this work, inasmuch as they only received £1200 for the chandelier, which weighs over six tons. The accompanying engraving will convey some idea of its general appearance.

The arrangements for the lighting of the area of the theatre have been more sharply criticized than any of the other details of M. Garnier's work. It has been asked, why he did not adopt the method of lighting from the roof, which has been so long in favour, and why a row of gas lustres was not placed on a level with the first tier of boxes.



It will doubtless be interesting to learn the reasons upon which M. Garnier supports his opinion on this matter, and these are to be found in a report made to Marshal Vaillant in 1864, of which the following is a summary:—

The plan now adopted of lighting theatres and similar places from the ceiling is productive of a certain amount of discomfort to the auditory, who feel themselves encompassed, as it were, by an immense ring of fire—a kind of glare, as from a huge magnifying lens—which seems to attack them on every side. There is, it is true, plenty of light in the area of the building—indeed, at times an excess of it—but it is not of an inspiriting or exhilarating character; it is rather the uncertain light of early morning battling with the feeble glimmer of the wax tapers in a ball-room. Besides, this method of lighting suppresses one of the most delightful properties of artificial illumination—namely, the actual presence of the lights within view of the spectators, a property which renders the latter system vastly superior to those in which either reflected or imprisoned light is employed; it produces, in fact, a similar change of feeling to that engendered by substituting a closed stove, of dull and cheerless aspect, for a glowing coal fire burning in an open grate. . . .

Let us now come to a consideration of this chandelier, which I hold in so much favour and so strongly recommend. And here the task before me is an easy one, as it will be unnecessary to describe an object with which everybody is familiar. I am simply desirous of combating the charges which have from time to time been brought against it, and to which I have already more particularly alluded—namely, that it causes annoyance to the occupants of the boxes on the fourth tier, and conceals a portion of the ceiling of the house.

I willingly concede that in many theatres the chandelier obstructs the view of some of the spectators; but this inconvenience is more frequently attributable to the faulty construction of the building itself than to the chandelier, at least to one of suitable shape and dimensions. If, as is the case at the present Opera House, as also in several other theatres, the inner walls of the building terminated in a slightly arched roof, instead of in a decorated ceiling, space would be afforded for placing the chandelier tolerably high, and in order not to obstruct the view of the occupants of the upper row of boxes and the galleries, it would simply be necessary to construct the chandelier of greater breadth and diminished height to produce an equivalent illuminating effect. If the chandelier is a very small one, with an inadequate number of burners, and therefore requires to be hung rather low in order to throw sufficient light into the theatre, this defect must not be attributed to the general system of illumination, but to an

imperfection in the particular medium selected for carrying it out. If the ceiling commences at a point directly above the heads of the occupants of the seats in the gallery, and, as a natural consequence, the chandelier has to be hung almost on a level with the third tier of boxes, the construction of the theatre must be blamed, but certainly not the centre light. If the chandelier has been designed in the form of a monster pear, the fault lies in the unsuitable and illogical shape selected; but the broader and less elongated form of lustre must not be regarded as equally open to condemnation. Thoroughly satisfy yourself as to whence the obstacle proceeds, consider well as to how it may be removed, and you will soon find that, instead of having to pass a vulgar condemnation on the lighting arrangements, by simply devoting a little time to a study of the interior construction of the theatre, the shape and dimensions of the chandelier, its height and point of suspension, all the inconveniences pointed out will quickly disappear. Were the chandelier to be raised to the intrados of the cupola, and to have only a similar projection to that of the central lustre in use at the Théâtre du Vaudeville, the illumination produced would be more brilliant with appearing lights, reflected or not, than that obtained from a ceiling light or luminous globe having a like number of burners.

At all events, for an opera house, or any theatre of the first rank, where the places in the upper parts of the house are but little sought after, and, in fact, are very frequently given away, it is unquestionably advisable to retain the chandelier—even though its presence may interfere with the view of some score of visitors, and perhaps entail a trifling pecuniary loss upon the treasury—if only for the sake of giving to the theatre that lively and animated aspect which the peculiar brilliancy of this kind of lighting always produces, and which is found to be so exhilarating in its effects upon the auditory.

As to the chandelier being an obstacle to a clear view of the ceiling, it is evident that, unless it is placed immediately underneath, it is an undoubted obstacle, a certain portion of the ceiling being, of course, concealed by its mass of crystals. But is this really an evil? Far from it. It is this obstacle, which forms, so to speak, a foreground, that adds height and grandeur to the house, breaking the soft and somewhat extended lines, and endowing the *ensemble* with an aspect of life and animation. If it were not for this one object standing out clear and sharp, the view would be cold and naked, the aspect of the theatre empty and monotonous; it would be like a vast treeless plain, or an expanse of sea without a ship. Why, therefore, should we contemn an object which is at once the basis of art and the law of nature? In the one case as in the other it is the contrast—the flat surfaces heightening the value of the lines—that gives point to the whole composition. Is not a portion of the sky hidden behind a range of mountains or a cluster of buildings? Are the figures in a certain picture or group all entirely visible? What is required is, that behind these planes—behind these obstacles, natural, or artistic—the groundwork of the composition should be clearly discernible, and that air and space should appear to circulate, as they do in the case of the tower or the hill in the painting, and as the vaulted roof and architecture of the theatre appear behind the chandelier, which partly conceals it from view.

The charges brought against the chandelier are, therefore, ill founded. It is always possible to mitigate, and even to avoid altogether, the inconveniences that have been pointed out; but it is quite impossible to provide an adequate substitute for this charming medium of illumination.

Briefly, then, when a luminous ceiling is employed for lighting a theatre, the light obtained is of a greenish tint, and very deceptive; heavy shadows are produced, the features of the visitors are badly lighted, their eyes are lustreless, and their countenances wear a mournful expression; even the mind is depressed. On the other hand, when the chandelier, with its clustered lights and sparkling crystals, is brought into use, the light is fresh and rosy, the shadows are warm, the eyes brightened, and the spirits more animated.

It is thus that the chandelier may, to a certain extent, be said to facilitate the realization of the noble formula—the good, the beautiful, and the true.

And in order to render the effect complete, and to give still more life and vivacity to the interior of the theatre, substitute for the small lustres and other inconvenient modes of lighting a circle of gas-lights round the upper cornice, in addition to the central chandelier. By this arrangement the too deep shadows will be moderated, and an agreeable light, hurtful to no one, disseminated; the decorations of the ceiling will be brightened up, and there will be formed a kind of grand circular chandelier, on an extended scale, surrounding and contributing to the effect of the centre lustre. This is the method of illumination I intend to adopt at the new Opera House, and I trust its realization may confirm my hopes and expectations.

Ornamental Lamp-Pillar at the Principal Façade.

Rostrated Lamp Column.

M. Garnier has carried out to the letter the above programme, defended with so much warmth. However, to prevent the backs of the boxes being thrown too much into the shade, he has had the saloons, which form, so to speak, their background, fitted up with gas-jets in such a way as to give to the rich tapestry hangings their proper crimson colour, which, with the addition of gold, forms the principal decoration of the house.

Beyond the theatre, the grand staircase is assuredly one of the most novel conceptions in the new Opera House, and one of those which do the greatest honour to the architect. Here we find on either side of the balustrade a group of three figures in galvanoplastic, the work of M. Carrier-Belleuse, and these support lighting apparatus, consisting of several clusters of jets, which are held by the figures in quite an original manner. Above the balustrade, at the top of the first flight of steps, several elegant candelabra are placed, the light from which illuminates the whole of the staircase, and produces a very brilliant effect upon the marble steps and stair-rails.

Lamp-Pillar on Grand Staircase.

Statuary Lamp-Column.

Between the staircase and the grand lobby there is the outer lobby, the ceiling of which is beautifully decorated with Venetian mosaic-work; this apartment is lighted by four chandeliers, each having 16 globes.

The grand lobby is 177 feet long by 42 feet wide, and 59 feet high; it is a marvel of architecture, further embellished by several very fine paintings from the hand of M. Baudry. It is lighted by ten gilded chandeliers of large size, each composed of 48 lights.

Lamp-Column at Side Entrance.

Lamp-Pillar in the Grand Vestibule.

At the extremity of the grand gallery are to be found two octagonal saloons, which prolong the perspective. Each of these saloons is lighted by four very rich marble pedestals, surmounted by a cluster of 21 lights, which serve as a crown to several heads of figures modelled by M. Chabaud. The ornamental work connected with these figures has been designed to represent the various kinds of lighting in use, and the four illuminating agents—gas, oil, wax, and electricity—are represented with considerable ingenuity.

We ought not to have omitted from our description of the stage and its accessories some notice of the green-room, which is adorned with paintings by M. Boulanger, and has its end wall entirely

covered with looking-glass, in which is reflected the beautiful bronze-gilt chandelier, with its 104 burners, used for lighting the apartment.

To all these branches of lighting must be added the illumination of the corridors and of the *loggia* leading to the grand lobby, the lamp-pillars in the grand entrance vestibule, the globes surrounding the circular waiting-room, and lastly the lighting of the exterior of the building.

Surrounding the *façade*, we notice the four magnificent bronze candelabra in the Place de l'Opéra, the two very fine lamp-pillars at the entrances of the side pavilion, the principal design of which is an obelisk in peach-coloured marble, the 22 light-bearing figures in bronze, and the eight columns in dark turquoise-blue marble, each bearing three lamps.

The several sketches annexed to this description will only convey a faint idea of the splendour of the exterior and interior lighting of this vast and magnificent building, and of the distribution of the 6000 gaslights which every evening set off to so much advantage the beauty and grandeur of the new Opera House at Paris.

(To be continued.)

Parliamentary Intelligence.

HOUSE OF COMMONS COMMITTEE.

TUESDAY, MARCH 13.

BARTON, ECCLES, WINTON, AND MONTON LOCAL BOARD OF HEALTH BILL.

(*Before Mr.* BATHURST, *Chairman; Lord* RANDOLPH CHURCHILL, *Mr.* MAITLAND, *and Sir* ARTHUR MONCK. *Mr.* BONHAM-CARTER, *Referee.*)

Mr. LITTLER, Q.C., Mr. SAUNDERS, and Mr. WRIGHT appeared for the promoters; Mr. VENABLES, Q.C., Mr. MICHAEL, and Mr. TABOURDIN opposed the bill on behalf of the Salford Corporation.

Mr. LITTLER opened the case on behalf of the Barton Local Board. The bill, he said, was, in some respects, perhaps, without any direct precedent. At present the district of Barton was supplied with gas by the Corporation of Salford, and the object of the bill was to enable the Barton Local Board to construct gas-works of their own. Barton was close to the boundary of Salford, the area of the district being 2200 acres. The gross annual value of the property was somewhere between £72,000 and £75,000; the number of dwelling-houses, 4100; mills and factories, 20 or 25; and the population had of late been rapidly increasing. In 1851, the population was 9700; in 1861, 11,000; and in 1875 it was estimated at 19,000. During the past year 251 houses were erected and approved, and plans had been passed by the local board for a considerable number of others, which were in course of construction. The special grounds for divorcing the district from Salford were very weighty. In the first place, the Salford Corporation works were situated in Regent Road, at a height of 70 feet above the district of Barton, so that by the time the gas reached Barton the pressure was very considerably diminished. Seventy feet difference of level meant a loss of 7-10ths of an inch; and, in addition to that, the surrounding district was much higher than Barton, so that if the pressure was sufficient for Barton, it must be in excess for the outlying districts. It had practically been found that the pressure was so bad and insufficient, that when the manufacturers lighted their works during the winter months, it frequently happened that the spinners were unable properly to see their work, and imperfect pieces were thereby thrown on their hands. At some works the pressure was sometimes as low as 3-10ths, and from 1867 to the present time there had been an increasing diminution in the quality of the gas supplied to the various works. In some mills the full number of lights could not be used, and similar complaints had been made by shopkeepers. Private consumers found that the irregularity of the pressure was such that at times the gas was thick and smoky, and a great many people had, in consequence, been compelled to have recourse to other means of lighting. Another hardship was that the corporation were very reluctant to lay down mains to new cottages, and, as the inhabitants of cottages always wanted gas, the owners of such property suffered considerably by the policy of the corporation. The public lamps had been most insufficiently supplied, and the local board had experienced the greatest difficulty in inducing the corporation to lay down mains and erect lamps where they were required. Sometimes as much as 18 or 20 months elapsed, after application was made, before mains were laid down in the public streets of Barton. The price paid was 4s. 8d., while the price in Salford was only 4s., although Barton was nearer to the works than some parts of the borough. In the corporation Acts there was no express power to make a differential rate as against the outside districts. The promoters had not the slightest desire to compete with the corporation, and were perfectly willing to make such arrangements as the committee might think right with regard to taking over the existing mains and pipes within the district. It certainly was contrary to public policy that a corporation, having no connexion with a district, should come in and supply it with gas at a higher rate than their own ratepayers were charged. It was no use making specific complaints to the Salford Corporation, for the defect could not be remedied, owing to the levels of the country; but since this bill was introduced, a better pressure had been put on for Barton. The result, however, was that the lights in the higher regions had burnt blue in consequence of the pressure being too great. A petition in favour of the bill had been signed by ratepayers representing £20,000 annual value.

Mr. *Jonathan Waddington*, examined by Mr. SAUNDERS.

I am a member of the firm of Moore and Waddington, cotton spinners, at Patricroft, in the Barton Local Board district. Up to the year 1854 we made our own gas. At the end of that year we commenced using gas supplied by the Salford Corporation. The price charged was 4s. 9d., the same as in Salford. There was an allowance of 3d. over 50,000 feet, and 6d. over 200,000 feet per quarter. At present there is no such allowance. The maximum price charged was 5s. In 1868 the Barton district was charged 6d. more than Salford, and the advantage to large consumers was abolished in June or September last year. In 1866 our mill consumed 585,000 feet; and in 1867 we had 732,000 feet; but from that time to the present we had never been able to get up to 600,000 feet. In 1866 we put down a new meter and new mains. The reason we have not got so much since 1867, I suppose, is because the district has increased, and there is a failure in the quantity coming through the pipes. We used to have Nos. 1 and 2 burners; now we have Nos. 2 and 3; but we are still unable to get the gas we want. The main supplying us is 3 inches inside. The number of our lights is 433. The workpeople have frequently complained of want of light. It interferes both with those who are on piece-work and those who are spinning. In December last a meeting of millowners was held, at which every mill in the district was represented, and I and Mr. Miller were appointed as a deputation to the local board to ascertain what their object was in introducing a bill into Parliament. The result was that we were satisfied with their scheme, and desire to support it. If this bill does not pass, we shall revert to our old plan, and make gas for ourselves. Six of the millowners are ready to combine together for that purpose. I believe the spot chosen as the site of the proposed works to be well selected. The petition in favour of the bill is signed by all the millowners except two. Their objection is not that the scheme is not good, but they want to have a private company instead of the local board.

Cross-examined by Mr. VENABLES: We have two meters, one with a 2-inch inlet, and the other with a 1½-inch inlet. We put down a new meter on the recommendation of the corporation. We had then exactly the same number of lights as at present. I do not think a larger meter would make any great difference in the pressure. I went to the corporation works and arranged with the manager that they should put down a larger meter, and they gave us the one we have now. I think the meter is sufficient, because in 1867 we had a good supply from it. There are more mills now than in 1867. One Monday morning we had a pressure of only 2½-tenths. We frequently have only four-tenths. I have not made complaints to the corporation, because we were put to an expense of £60 or £70, and it was no use. It is the general feeling of the neighbourhood that the price is excessive. So far as we are concerned, we should not object to pay the price if we could get the gas we want. I have complained privately to members of the corporation who are on the Gas Committee. In the resolution passed by the meeting of millowners, nothing was said about insufficient supply.

Re-examined by Mr. SAUNDERS: Since 1867 there has been a very large increase in the houses and population of Barton. The rise in our price is almost equal to 1s. 2d. now, as we do not get the allowance for large consumers.

Mr. *Thomas Hood*, examined by Mr. WRIGHT.

I am assistant manager to Messrs. Holesworth and King, cotton spinners and manufacturers. We employ from 650 to 700 hands. Previous to 1873 we manufactured our own gas. We then commenced to have it from the Salford Corporation, as the price of cannel was so great that we could get gas at a cheaper rate from them than we could manufacture it for ourselves. They had old standing contracts for cannel. Before we had gas from them, their superintendent inspected our works and mains. They laid two services, one of the same capacity as the main which passed our door, and another 2-inch service. The main is a 5-inch one. They declined to supply the meters, and we put them in of the capacity they estimated would be sufficient to pass the required gas. They gave us the size; we bought the meters, and they put them in. We have between 1000 and 1100 lights, and we pay the corporation £580 a year. The supply has been very unsatisfactory. As soon as winter approached we found that we should be short of gas. We enlarged our burners, but it only had the effect of taking the supply from one part of the mill to another. On more than one occasion we have requested the corporation to attend to our wants. On one occasion we had to telegraph to them for more light, as we could not go on with our works. Mr. Pembleton came and examined the meters and pipes, and laid down a small branch, but he never connected it with us. We have recently commenced erecting our own works, and have bought retorts. We have frequently had complaints from the hands that they had not sufficient light. Their wages depend on their turn-out, and good light is essential to good wages. The pressure in the mill is about 6-10ths.

Cross-examined by Mr. VENABLES: Our consumption last quarter was nearly 1,250,000 feet. The corporation raised the price of their gas on account of the increased cost of the cannel. No doubt it was a reasonable thing for them to do. At 42s. 6d. for cannel we found it did not answer to make our own gas. The cannel used in Salford now is from 15s. to £1 a ton. Probably if we used cannel ourselves we should use a better quality and give 27s. We think it would be advantageous to us now to make our own gas at almost any price for cannel. The price is of less moment to us than to have every facility for obtaining all the gas we want. At the time we ceased to make gas for ourselves we had no idea that the pressure at Salford was as inadequate as it is. We supply some cottages with gas that we get from the corporation, and we charge 5s. while paying 4s. 8d. When we made our own gas we charged the cottages the same price. In 1872, however, we charged them 4s. 2d. I cannot say whether or not there was a fog at the time when we telegraphed for more light. I do not know why the pipe which the corporation put down was not connected. I applied to have it done, and Mr. Pembleton promised it should be, but it never was. The meter was ready at the time if the pipe had been connected.

Re-examined by Mr. WRIGHT: Our complaints have had reference entirely to the insufficiency of the supply.

Mr. *Isaac Blears*, examined by Mr. SAUNDERS.

I have been manager for 20 years at Messrs. Irving and Co.'s mills. They have two mills. I remember Mr. Pembleton testing the pressure at the entrance to our works in 1869. The pressure was 6-10ths there. We were then suffering from shortness of supply. At one of the mills we had a fire in 1871, and the number of lights has been thereby reduced to about 300. The supply at that mill has been better since then, but when the days are very short, and a large quantity is taken out of the mains before it reaches us, the light is very bad even now. Before the fire the workmen constantly complained of bad light. On one occasion the lights all went out and stopped the mill. The second mill was built after the fire. The supply of gas there has certainly, on the whole, been better, owing, in a great measure, to part of the mill not being in full work. We have latterly had more lights burning, and we find we are short of gas. There are three supply-pipes to the mill, one 3-inch, which supplies 240 lights; one 2-inch, which supplies about 200 lights; and one 1½-inch, which supplies about 50 lights. In February last the pressure was tested at the meter, and was found to be 8-10ths. I advocate the bill on the grounds of the price, quality, and quantity.

Cross-examined by Mr. VENABLES: At every mill there must occasionally be derangements in the machinery for the supply, but if there had been any such cause in our mill we should have discovered it. All our complaints have been about the shortness of supply. I have not made a complaint within the last two years.

Mr. *Joseph Sweetman*, examined by Mr. WRIGHT.

I am a joiner and builder in Eccles. In 1872 I was the owner of about 30 cottages in the Vicarage Field. I applied to the corporation to have the gas laid on, but the answer I got was that there were not cottages enough to ensure sufficient rental, and the connexion was not made for about twelve months.

Cross-examined by Mr. VENABLES: At the time I made the application there were about 20 cottages let. I believe the corporation sent round to ascertain if the tenants would take the gas. The road was in a fit state to lay the pipes down. The next year, when the cottages were all let, the gas was supplied. The corporation offered to supply it if I would guarantee £50 a year.

Mr. *Robert Hall*, examined by Mr. SAUNDERS, gave somewhat similar evidence with regard to twelve houses in the Polygon, of a total rental of about £800 a year.

Mr. *Black*, examined by Mr. SAUNDERS.

I am a draper in the Liverpool Road, Patricroft. The supply of gas has been very bad for the last two or three years. It is not only insufficient, but is very poor. When the factories are closed I have a somewhat better light, but it dies away again when the hands have gone home, and lighted up their houses. I have on many occasions had to shut up my shop for want of gas. I have complained to the working foreman to the corporation, and he has attended to it, but the supply has still continued bad.

Cross-examined by Mr. VENABLES: I did not address any complaints to the office.

Mr. *Royle*, corn dealer and grocer in Liverpool Road, described the light in his shop as sometimes no better than that of a penny tallow candle. He had more than once complained to the gas collector and to the working foreman. He never expected to gain anything by applying direct to the office.

Mr. *E. Shrewsbury*, a chapel keeper, Mr. *R. Williams*, an innkeeper, Mr. *Thos. Wood*, a butcher, Mr. *Joseph Gregory*, a tailor, and Mr. *G. Drinkwater*, chemist and druggist, gave corroborating evidence of the deficient supply of gas in Barton.

Mr. *Trenbath*, examined by Mr. SAUNDERS.

I am clerk to the Barton Local Board, and have filled that office since 1867. I have lived in that district all my life. The local board were constituted in 1854 under the Public Health Act of 1848. I have known complaints to be made by the inhabitants to the local board, and by the local board to the Salford Corporation. The price charged in the Barton district down to 1872 was 4s.; in 1873 it was raised to 4s. 2d.; and in June last an extra 6d. was put on, making it 4s. 8d. I believe the price in Salford is 4s. now. The corporation supply gas for the street-lamps. The charge used to be 12s. 6d. per 1000 hours, but it is now 14s. In 1871 I made a complaint to the corporation about the price and inadequacy of the gas, in consequence of communications received by the local board from the ratepayers of the district. I was one of a deputation appointed to represent the case to the corporation. Mr. Halls, the gas engineer to the corporation, promised us that our representations should be taken into consideration, and we were led to expect a reduction in price and a more satisfactory supply. From 1871 till the present time the supply has been getting worse. In September last we made a further complaint to the corporation about the price. [Witness then detailed the steps which were taken, and the correspondence which was carried on before the present bill was deposited. The Salford Gas Committee, he said, refused to receive a deputation from Barton on the subject until the bill was deposited. They consented, however, to receive one on the 23rd of December.] In the Corporation Act, the power to supply the Barton district with street-lamps is permissive. The first agreement as to the mode of lighting the streets was in 1858. Frequent complaints had been made by the inhabitants that the roads had not been properly restored after the corporation had taken them up. This was in consequence of the corporation not giving the local board sufficient notice. If the corporation repaired the roads they charged 1s. a yard, but if the local board did it the corporation only allowed 7d. a yard. Under the agreement the local board had to determine the times of lighting and extinguishing the lamps, and complaints had frequently been made that the corporation lighted the lamps in a way that was most inconvenient to the inhabitants of the district.

WEDNESDAY, MARCH 17.

Mr. *Trenbath*, further examined by Mr. SAUNDERS.

The acreage of the Barton district is 2260 acres. The population returns are—1851, 9720; 1861, 11,146; 1871, 15,126; and the present estimate, 18,500. The corresponding figures of the rateable value are—1855, £23,000; 1861, £27,219; 1871, £44,956; 1875, £65,700. It has very nearly trebled since 1855. The number of houses corresponds to the increase of population. In 1851 there were 1839; 1861, 2295; 1871, 3205; and 1875, 4100. 251 houses were built in 1874, and plans have been submitted for 130 more. Factories have also increased. In 1861 there were 12; in 1871, 19; and in 1875, 23. The rateable value of those factories has gone up from £3311 in 1861 to £9458, the amount at the present time.

Cross-examined by Mr. VENABLES: The minute, showing the result of the deputation that waited upon the corporation, stated that they had not succeeded in obtaining an immediate reduction in the price of the gas, but the matter would have the prompt attention of the corporation. The minutes are silent as to quality. There were continual complaints from the ratepayers to the local board. On one occasion when I saw Mr. Halls, the manager, I mentioned the complaints to him. I have never ceased complaining. My dealings with the Salford Corporation have been chiefly through the foreman lamplighter, and I told him to get fresh burners. I did that under instructions from the Barton committee. On June 4, 1874, I had a letter intimating that, in consequence of the price of cannel, an addition of 8d. per 1000 would be made to private consumers. It is not true that, at a meeting of ratepayers, the discussion turned entirely upon the price of gas. The question of price was all that was necessary to report to the Local Government Board. We were told that if the price of cannel fell the price of the gas would be reduced. The Salford Corporation have not always attended to applications which have been made for more street-lamps. When the bill was deposited it was proposed to give 14-candle gas. The local board decided ultimately to give the same quality of gas as the Salford Corporation—that is, 18 candles. Swinton is supplied at present by the Salford Corporation. We did propose to supply them from our intended works. I cannot say whether it was agreed that Swinton should be supplied on the same terms as Barton. The action taken in the matter by Barton was at the request of Swinton. I do not exactly know how that came about. The chairman of the Barton Board is a member of the Swinton Board, and I expect he spoke about it. I cannot say how Swinton came afterwards to be struck out. There was a difference of opinion on the Swinton Board about it, I believe, and our board thought we had better go in for supplying our own district only. I do not know whether Swinton was struck out after the depositing of the petition.

Re-examined by Mr. SAUNDERS: The framework of the bill confined its objects to the Barton district absolutely, but with a permissive power to the Local Government Board to extend the limits to Swinton. The estimate for the works had reference only to the Barton district. It was my instructions all through to get a good quality of gas. As to the notice from the Salford Corporation with regard to the rise in price, we distinctly said that we accepted it for this season only. We had no other alternative. The streets would have been in darkness if we had not done so. We were obliged to accept their terms, and it is in consequence of that that we desire to have the powers which this bill would give us. There was an increase of 8d. per 1000 at Barton, but only 6d. at Salford; and, although the corporation promised when cannel went down to reduce the rate, they would not promise to alter the differential rate between the two places. As to new streets, if we had the powers we seek we should of course be able to light them at once without having to wait the pleasure of the Salford Board.

Mr. *Thomas Heywood*, examined by Mr. WRIGHT.

I am surveyor to the local board, and have been so for 18 years. During that period the corporation have frequently taken up the streets for gas purposes. They have never given notice before doing so till last year. I have frequently made complaints to them about it, one occasion was when I was surveyor under the Barton Turnpike Trust. I called to see the superintendent of the Salford Corporation about not having any notice at all on the matter. When streets are taken up for gas purposes we reinstate them, but we do it under the orders of the corporation.

Cross-examined by Mr. VENABLES: I say that till 1874 we had no notice as to the breaking up of the streets. That had gone on for a long time. I had complained of it. I complained to the out-door superintendent. I have done so many times. When it was attended to it was not exactly as I wished. I knew I was entitled to receive notice. Sometimes we got notice that they were going to take up a short length of road, and then they would take up a long length.

Mr. *Tice*, examined by Mr. SAUNDERS.

I am a gas engineer, living at Worsley. I was called in by the Barton Local Board to advise them as to the gas supply. I have gone carefully into the question of the existing supply, and the proposal of the board to supply gas for themselves in their own district. I have examined the mains which now supply gas in the Barton district. There are two trunk lines leaving the Salford works. The lower one is 24 inches diameter, and runs through a thickly populated district for some distance; it then joins a 15-inch main, and then a 12-inch main, which reaches to Barton. That enters Barton at a level 15 inches below, which causes a want of forcing power. The 12-inch main then passes down the principal street, and when it reaches Patricroft Bridge it passes above the Wyndham Road, where it diminishes to a 7-inch pipe, that passes on to meet the upper main from the Worsley Road. All the way through the Barton district there is a declination of the pipes, which increases the difficulty of conveying gas through them. The upper main is 14-inch, which, on leaving Salford, runs through a district having an enormous consumption. It passes on till it is about half way through the upper part of the Barton district, where there are two branches connected with it, one going to Broad Oak Park, and the other passing into the Worsley Road main, at an elevation of 160 feet. The main supply to the Worsley district is passed through the Barton district. In consequence of the lower level of Barton as compared with Salford, it is not possible for gas to stop in Barton. It requires considerable pressure to force it to the lower part of the town. All the country north of the Barton district is on a higher level, and it draws the gas away. By a natural law it must be so; just as water will descend, so gas will ascend. If there were not those outlets to the higher levels there might be a sufficient pressure applied to keep it in Barton. It is undoubtedly a very difficult district to supply on account of its having higher ground on both sides. Under present circumstances, looking to the position of all the places supplied, it is quite impossible to supply them properly. The amount of gas for Barton to consume, if it were properly supplied, is 60 million feet per annum. If the mains were detached from the Worsley mains it would not be possible to supply Barton properly under the present system; but if the present mains were to be supplied from works at a lower part of Barton, they would be large enough. No doubt the present mains would do all that is required if we had gas-works in our own district. The pressure at Messrs. Waddington's has never exceeded 6-10ths. They have a 2-inch main in the centre of the works, with ¾-inch branches, and at the far end of the branches the pressure was only 3½-tenths. That is certainly not sufficient. I saw them burning, and tested them on several occasions. To give a good light there ought to be at that point a pressure of at least 6-10ths. I attribute the low amount of pressure to the fact that the gas-works are higher than the mills, and are also a long distance off. I believe £25,000 to be wanted for the new works. Mr. Wood prepared the estimate, but he is too ill to be here. I have gone into the figures, and believe them to be correct. They come to £26,606, with £3390 for contingencies, making a total in round numbers of £30,000, which is the amount named in the preamble. I have not gone into the question of the price at which gas can be manufactured.

Cross-examined by Mr. MICHAEL: I am a gas engineer. I have constructed works at South Minster. They are not large works. They make, perhaps, 15 or 20 million feet per annum. I have constructed works at Great Barfield, and also at a small town in Essex, having about 20,000 inhabitants. I had nothing to do with the Barton scheme till a month ago. I certainly should not have recommended Swinton to be included with Barton. I did not obtain my information as to the mains from the Salford Corporation; I opened every street in the district and obtained the information myself. I have put down £9000 as the value of the mains. They are a little over 14 miles in length. If we erected gas-works at Barton, the mains that are down would be sufficient, speaking generally. We should utilize the whole of the existing system. I do not know the initial pressure of the gas at the Salford works. We test a consumer's meter on the inner side. To know the pressure of gas you may test on either side. The corporation are responsible for the public lamps. I do not know the clause which says so. The amount of pressure at the works must be very high, 30-10ths to 40-10ths; and in the course of three miles there would be a loss of 30-10ths. I deliberately say that. In our proposed works at Barton the initial pressure is placed at 8-10ths. Our length of mains will be 1½ miles. We shall not have lost 5-10ths at the end, because the ground rises. I have heard of putting valves in pipes. I do not know of any valves in these pipes. I have not investigated that point. Worsley is 136 feet above the level of the sea. I do not know where the valve is on that main; I do not know that there is one. I have taken no means of ascertaining whether there are valves or not, but I am bold enough to say that there are none, for I have tried the pipes. I stopped the pipes and tried the gas last Monday week, between 10 and 12 at night. I did not break the main, I simply tapped a hole in it and plugged it up again. I did not give any information to the corporation as to what I was going to do. It was at Worsley Road that I laid open the main, drilled and bladdered it, and plugged it up again. I did it at three places altogether. The pressure at the junction was 21-10ths, at the Worsley station 18-10ths, and at the low part of Worsley 15-10ths. The pressure over the whole of Barton would be 14-10ths. I made some other tests between five and six in the evening, and found from those that the pressure at Barton was about one inch. The proposed works at Barton would cover about two acres. No plan has been prepared and no ground acquired.

Re-examined by Mr. SAUNDERS: I made the tests to see whether the gas flowed into or out of the Barton and Worsley districts. Those tests justify me in saying that the gas flows out of the Barton and into the Worsley district. I did not give notice of those testings to the corporation, as I was anxious to find out the ordinary normal flow. It is not possible to get a pressure of 30-10ths in the Barton district. The general height of the Barton district above the sea is about 70 feet, and 8-10ths would be about the average pressure throughout the district. Testing the street-lamps at the burner is a reliable test for the mains, especially if you take several of them. It is the duty of the corporation to keep the lamps in order.

Mr. *McMillan*, examined by Mr. WRIGHT.

I am manager of the Stoke-upon-Trent Gas Company. I have been manager and assistant at different gas companies for 20 years. I was instructed by the Barton Local Board to estimate and report upon the expense of erecting gas-works at Barton, and on the price per 1000 feet. I have gone over the district. The place fixed for the site of the works is a good one. The population of Barton is about the same as at Stoke. The town of Barton is more level throughout than Stoke. There is only one point in Barton that would be below the level of the proposed works. There are five gas companies in the parliamentary borough of Stoke. It has never been attempted to combine them into one concern. The expenditure needed to supply 50 million feet per year would be £30,000. At Stoke we have £29,500, but we make between 65 and 70 million feet of gas. Last year we had about 11 per cent. leakage; in 1869 it was 14·9, but in 1873 it was only 6·6. We supply 14-candle gas. To supply gas at Barton would cost 2s. 8·29d. less residuals. In that I allow 2s. 2·66d. for cannel at £1 a ton. Working expenses, purification, &c., 6·9d.; management, 1·82d.; interest and other expenses, 8·10d. Taking the cost at 2s. 8·29d., it is necessary to allow 10 per cent. for loss in various ways. My calculation makes the cost 3s. 6·67d., but I arrive at the 2s. 8·29d. by deducting the cost of the residual products. The maximum amount of gas the proposed works would make is 60 million feet. The items in the estimate are, in my judgment, reasonable and sufficient; 15 per cent. is allowed for contingencies. Gas could be made cheaper in the Barton district than it can be supplied from Salford. If there were a full supply of gas in the Barton mains, Worsley would be better served. An excessive pressure upon the burner does not improve the light, and causes waste.

Cross-examined by Mr. VENABLES: There are four, not five, companies in the Borough of Stoke. The parliamentary borough consists of several towns. They have corporations of their own. I do not know the population of the borough. If Barton were within the municipal boundary of Salford, I do not know of any reason for dividing the supply. There ought to be separate works

to supply Barton properly. The called-up capital at Stoke is £25,000, and we make between 60 and 70 million feet a year. The works were made in 1845. I believe those works could now be made for about the same sum as was expended in 1845. Iron is about the same in price as it was then. I can get mains at £6 15s. per ton. Ten years ago, the price was a little under £6. The retort-house proposed is to contain 80 retorts. The engine and exhauster would pass 20,000 feet. Four purifiers would be needed, 12 feet square. The meter is to be for 20,000 feet per hour, and there is to be an 18-inch governor with 12-inch condensers. The scrubber would be 25 to 30 feet high. We have estimated for only one large gasholder. The total for all that would be £30,000; the gasholder alone would cost £6000. The largest mains would be 18 inches; they would cost about £7700. Often the amount of pressure depends on the fittings.

Re-examined by Mr. WRIGHT: I would allow £7700 for the mains. If gas-works could be erected for £30,000 some years back, so as to bring a dividend of 7 or 10 per cent., they certainly could now be constructed for that sum when no profit is required. If I were a resident at Barton, I should prefer to have works there rather than to receive a supply from Salford. There are four gas companies at Stoke, and four governing bodies; they object to have their gas made for them by those who do not govern them.

Mr. *R. P. Spice*, examined by Mr. SAUNDERS.

I am a civil engineer, of Parliament Street. I have had 30 years practice, and have had large experience in every part of the kingdom. I have considered the proposal to erect separate gas-works at Barton. I know the general lie of the country with reference to levels. I believe that gas could be more economically supplied from Barton than Salford, having regard to the different levels. The present arrangement is absurd. Barton is starved by the drain upon the mains. The high-level districts rob those at a lower level; the high-level districts must get more than they want, and the lower ones less. There must be a waste of gas, as well as a great cause of complaint from the consumers. I think that the bad lighting is from want of pressure. In supplying Barton with gas by works of its own, the present mains could be utilized; the inhabitants of all the districts would then get a better supply. The Salford Corporation would not be losers, for I assume that an equitable sum would be paid them for their interest. At present there must be a large quantity of unaccounted-for gas—more than 14 per cent., I believe.

Cross-examined by Mr. VENABLES: If no new works were erected at Barton, I would rearrange the pipes. I would remove the pipes leading to the upper districts from the main trunks running into Barton. There is at present a very feeble supply of gas in Barton, and that I attribute to the draining off of the gas to the upper districts. There is no reason why a district including many different levels should not be supplied from the same works.

Mr. *F. J. Bramwell*, examined by Mr. SAUNDERS.

I am a civil engineer, president of the Institute of Mechanical Engineers, a member of the Council of Civil Engineers, and a Fellow of the Royal Society. I have turned my attention to the flow of liquids and gases through pipes for many years. I have considered the question of the gas supply from Salford to Barton. I have been on the spot. I do not consider the mode of supply economical or beneficial either to Barton or Salford. I have heard the evidence of bad light in the Barton district, and I think it is a cause of absolute loss to Salford, because of the pressure that must be exerted to give the supply that is given. Taking the gas-works as 115 feet above sea level, and Barton as between 99 and 59, assuming no drainage off from the mains and a dead end at Barton, the pressure required would be 5½-tenths, to compensate for declination, and 8-10ths to drive out the atmosphere. That would be without any head whatever for flow through the mains. Taking the quantity of gas supplied to Barton to be 60 million feet per annum, or 300,000 per diem, you get 50,000 feet as the amount consumed per hour. From calculations I have made on the basis of the number of burners, I get the same result—50,000 cubic feet per hour—as the amount consumed. With a very heavy pressure, and with no taking away of the gas for other districts, the present mains, as now arranged, are inadequate to supply Barton with the gas required. I found 2½ miles of main from the Regent Road works to where the 12-inch main terminates; it begins at 14 inches and ends at 12. I have taken the junction at midway, and, allowing 1 inch pressure per mile, I find that main would deliver 34,000 cubic feet per hour. The 12-inch would deliver 23,000. From what I saw of the district I should think there is population enough there to abstract the 11,000 extra feet that would be brought. I have therefore treated it as though Barton had got a 12-inch main from Salford. The other source of supply is the 8-inch main above it, that comes from a main 18-inches diameter, but that is diminished by a 12-inch. I give Barton the credit of the whole 8-inch main, the length of which is 3 miles. Assuming the same pressure per mile, the delivery would be 8300 feet; 31,000 cubic feet per hour would, therefore, be the supply, whereas the requirements are 50,000, even if no gas went through to places beyond, so that the measure of the incapacity of those mains to supply Barton is the difference between 31,000 and 50,000. Then there would be a further reduction for all the drainage of gas to the districts beyond and around Barton. The result would be that you would want 5½ tenths to compensate for the difference of level, 8 tenths to give the outfall into the burners, and 21½ tenths to produce the flow; so that the pressure at the governor must be 35 tenths. The 8-inch main would require 43½ tenths. I certainly think it not economical to supply Barton with gas which is on its way to Worsley. It is necessarily a bad arrangement to force gas into a low-lying district on its way to a higher one, and that is what is evidently done here. What I have heard of the evidence confirms me in that view. It is said that the lights often go out in Barton. That is just what would happen from such an arrangement. The capital cost of works with reference to the number of cubic feet sold ranges from 10s. to 12s. per 1000 cubic feet sold per annum. Salford is 12s. 6d.; Manchester, 10s. 5d. Applying those figures to a consumption of 60 millions, I think £36,000 would be ample for erecting works to supply Barton properly with gas. I have examined the accounts of the Salford Corporation with reference to their expenditure as regards gas, and I find it to be £27,000 in 1871, £17,000 in 1872, £16,000 in 1873, and £23,000 in 1874; making £83,000 in four years. One and a half year's cessation of the spending of their capital would give a sufficient amount for the erection of the works at Barton. Salford would be able to manufacture its gas more economically if it were separated from Barton; and it would be delivered in a more economical manner. As to the price of iron, it was not much cheaper 30 years ago than it is now. Fifteen years ago it was somewhat cheaper. If the works were constructed as proposed in Patricroft, the existing mains would do all the work required for the district; my evidence has not been against the mains, but the way in which they are fed. If the connexion were cut off between Barton and Worsley, there would be no difficulty in supplying Worsley through the upper main.

Cross-examined by Mr. VENABLES: My basis has been 60 million feet to be sold per annum in the Barton district. That was my estimate from the population, and I check the maximum rate of delivery by the number of burners. To a certain extent that is conjectural; that is, I have taken so many cottages, dwelling-houses, mills, street-lamps, and so on. I have assumed that every house is a consumer. I take one cottage as having three burners; in each small dwelling-house, three; larger ones, seven; above £40 a year, 10: 10 mills with 600 lights each; 12 works with 150 each; shops with 10 burners each; 400 street-lamps; and in that way I come to 24,000 burners; but 16,600 burners would give 15,000 feet an hour. I do not doubt that it is for the permanent interest of the corporation to supply gas in the largest quantity they can, but they may not desire to expend money in enlarging a long system of mains in order properly to supply a district beyond, and may, indeed, refuse to comply with the demands of the people, who, in consequence, suffer. As to the upper district draining Barton, if you make a gas-pipe go upwards, gas will as certainly go upwards, as water goes downwards, and the petition says it does do so. You might have a back pressure, but at an elevation of 275 feet, you would want a very strong one.

Re-examined by Mr. SAUNDERS: If the consumption is less than 60 million then the estimate of £30,000 would, *a fortiori*, be sufficient for the supply of Barton.

By the REFEREE: The maximum pressure obtained at the gas-works is, I believe, 6 inches. That is a very heavy one; 4 inches or 4½ inches is a more usual one.

Mr. VENABLES: We should like to have the levels proved.

Mr. *J. Bowden*, examined by Mr. SAUNDERS.

I marked the levels on the map. I took them from the Ordnance map. There is not always a bench mark. Wherever there are two levels on the Ordnance map, I have scaled it off. I have examined the contour lines of our map, and believe that they agree with the Ordnance map.

Cross-examined by Mr. VENABLES: Where the proposed works are, I have marked 70 feet, because Worsley is 71, and I know that spot to be lower than Worsley; therefore to be on the safe side, I marked it 70.

Mr. MICHAEL said that on the Ordnance map at the initial point, it was marked 74, and then there was a rise of 15 in the road, which made 89 feet instead of 70.

The maps were shown to the committee, and, after examination,

The CHAIRMAN said the witness's explanation was that the point of the field, where the gas-works would be erected, was lower than the point marked 74. After some further discussion, it was agreed by Mr. Saunders that a telegraphic message should be sent to Barton for the ground to be surveyed that night, and the result made known to the committee the next morning.

THURSDAY, MARCH 18.

Mr. LITTLER said the level of the ground on which it was proposed to erect the new works had been taken, and was found to be 87·15. His opponents were, therefore, right on that matter, and the promoters were in error in placing it at 70 feet.

This ended the case for the promoters. The first witness called by the petitioners was

Mr. *Halls*, examined by Mr. VENABLES.

I am an engineer, and manager of the gas-works of the corporation. I am well acquainted with the Barton district. The mains have all been either laid or relaid in my time, and I know all about them. I live in the district of Barton. There are altogether nearly 20 miles of mains. We have a large quantity of unproductive mains with very little more than street-lamps upon them. As to quality, we are limited to 18 candles. The highest we have given is 22 to 23 candles. We have never been below the standard. There has been a somewhat less illuminating power lately, but we have always been above the standard. The reduction in the illuminating power is in consequence of the advance in the price of cannel coal. The price to the consumers at Barton in 1862 was 4s., and continued so till 1871. When it was that price at Barton, it was 8d. less in the borough of Salford. In 1873 there was a rise of 2d., in 1874 of 6d., making the price 4s. 8d., which it is now. The price in the borough was also made 8d. more; so that the difference between the two prices is still the same. We are still working with coal which was bought when the price was very high. When that stock is used up gas will be cheaper. As we shall continue the differential rate between Salford and Barton, it will be to the interest of both to decrease the price as soon as possible. I recommended the advance in price to cover the extra cost of cannel. Worsley is supplied partly by means of pipes passing through Shading Lane at the north of Barton. There is also a 6-inch main running through Broad Oak Park, which joins another main between Swinton and Worsley, and they all go to the supply of Worsley. A pipe was laid near Montem Green to increase the supply, as it was found to be rather weak. We supply the London and North-Western Station at Eccles. They are very particular as to their gas, especially the signals, and yet we have had no complaints from them. We also supply gas to Trafford Park, which is on a low level, and have never had complaints of any kind. The corporation have invested £300,000 in the gas-works at Salford. We should not have laid out so much by £80,000 but for the other districts. It would be very difficult to separate Barton from the rest of our district. The corporation have lately built new works in Liverpool Street; although not completed, they are partially open. They have cost £100,000, and they will be capable of producing 2,800,000 cubic feet of gas a day. We shall, in future, supply all the districts from those new works. We shall, when the works are quite finished, have nearly 1200 retorts at work. The number of consumers in Barton is about 2000. In 1865 it was 740. When I came to watch this case and give evidence I had not the slightest idea that there would be complaints as to supply. It never has been intimated to me by the Barton Local Board that the pressure was insufficient. I have never had from any one any complaints whatever as to the supply of gas. There have been the ordinary complaints, which have always been rectified at once. There was one mill where a complaint was made, but it was immediately remedied. I knew the local board had applied to the corporation to reduce the price. I never heard one word against the corporation except as to price. The question was whether we should charge the outside consumers the same as those within the borough. I was present when the Barton deputation waited on the corporation in February, 1871. The complaint then was as to quality, and I recollect taking some of the members of that deputation into my photometer-room and showing them the quality of the gas. Nothing was said about insufficient pressure; it was a question of price. From 4-10ths to 5-10ths at the burner would be a good pressure at Barton. I had the district tested last December, and we had a mean working pressure in the mains of 12-10ths. At the same time my check gauge in my own house showed 14-10ths. My house is on a little higher ground; that was at half-past five in the evening, when gas was being used at all the mills, as well as at the houses. Messrs. Moore and Waddington's works are under meter, I believe. The meter power at their works is not sufficient. Had my attention been called to the matter, I should have seen that, and should have recommended a larger one. They would then have obtained a better light, supposing the internal fittings were good. We are not responsible for those. If at the entrance to the premises there is sufficient gas, it is the fault of the consumer if he has not a proper amount of light inside. I remember a telegram from Mr. Hood. It was in consequence of a fog at Eccles. The pressure was increased as soon as that was known. As I understood, Mr. Hood has 8-10ths of pressure inside his mill. That would show that the pressure outside was 10-10ths. I remember Mr. Blears making a complaint. It was only a stoppage in the meter, I believe, for they were able to work the next morning without anything being done. The other complaints from Mr. Blears were made 10 or 12 years ago, before we laid the trunk main. Mr. Sweetman, who has some cottages in Vicarage Fields, wanted us to lay some mains for street-lamps. We said if he would pay £50 towards the cost, and assent to the corporation owning them after they were laid, it should be done. We never lay down mains before the roads are metalled; the vehicles would break them if we did. Mr. Pember wanted some mains laid in Corder Street. Mr. Trenbath sent us a letter on the subject, and we wrote in reply that the local board should contribute something towards the expense, the corporation being of opinion that they ought not to bear the whole expense of laying down mains for about four street-lamps. If, as Mr. Tice said, Messrs.

Moore and Waddington have a pressure of 6-10ths inside their works, they ought to have a good light, supposing the internal fittings to be good. Mr. Tice said that he found a pressure in all the mains of about 6-10ths, but when I examined them, although all the mills and houses were going, there was a mean pressure of 12-10ths, and at my own house 14-10ths. The mills shut at six o'clock; there is then an increased pressure of 5-10ths at all other places. That would bring the pressure up to 17-10ths. In 1874 we supplied 31,378,000 feet of gas, which is a daily supply of 157,000 feet. Assuming a make of 40 million feet, and a sale of 36 million, the selling price should be 5s. per 1000.

Cross-examined by Mr. LITTLER: The railway station is not on the junction; it is on the 8-inch main. The railway line is 25 feet below the ground. The signal lights are 10 feet above the service-pipe. I could not say how it was that Mr. Waddington got less gas last year than before, without examining the fittings. I do not mean to say that all the complaints which have been made are in consequence of defective fittings. I never saw a defective supply. To a certain extent I do not believe the witnesses who have spoken to that. I cannot account for what they have said. I have known many mills where the burners have been almost useless. Probably an experienced gas-fitter would recommend new ones. If a man has new burners every year, as one gentleman says he has had, he ought to be able to get a good light. In 1874 the cost of coal was £52,900, and we received for residuals, £19,260; in 1873 the coal was £41,400, and the residuals £17,400, but coke was very high. To a certain extent, when the price of coal is high, the price of coke is high also, and *vice versâ*. My house is 25 feet above Montem Road. Our usual night pressure at the works is 30-10ths, and the day pressure 10-10ths. I cannot account for any deficiency in the Barton district. With a 3-inch pressure at the works, we can maintain a working pressure, all the way through to Patricroft Bridge, of 12-10ths. The leakage last year was 14·3; the year before not quite so much. We have not put on a higher pressure than usual this last winter.

Re-examined by Mr. VENABLES: If Mr. Waddington had complained to me instead of to the committee, I could have assisted him. I have no doubt but that in every case of complaint I could have remedied the matter. Last year the residuals were to the coals as £19,000 to £52,000. The reason was that coke was high. Last year we got 10s. a ton for our coke; a few years ago I was glad to sell it for 3s. On an average of years, however, a fourth is the proper proportion for residuals. Cannel coke is not so good as other coke: so that there is no comparison between a town using cannel coal, and one that uses ordinary coal.

By the CHAIRMAN: The works at Liverpool Street are not yet completed. They are supplying about 150,000 feet a week. It is our intention to supply all the mains from those works in future.

By the REFEREE: With reference to the mains that pass through Eccles to supply the outer districts, there is only one that has a valve in it—namely, the one in Shading Lane. We worked it for a few months without a valve, but finding one was wanted, we placed one there. We propose to make an alteration in the mains going to Swinton. I do not think we could work the outer districts without using the mains which run through Barton.

Alderman *Tysoe*, examined by Mr. TAHOURDIN.

I am a member of the corporation, and chairman of the Gas Committee. I have heard Mr. Halla's evidence, and believe it to be correct; but he did not mention that there had been an increase in the amount of wages paid, and the price of other materials beside coal. Every member of the Gas Committee is a large consumer of gas, and certain to propose a reduction in the price as soon as one can be made. I never heard of any complaints from the Barton district. Three members of the Town Council live at Barton. I have never had any complaints from them. I am well acquainted with Mr. Waddington, and meet him every day on 'Change. He has never made any complaint to me as to the supply at his works till the time referred to in his evidence, when this bill was put forward by the Barton Local Board,; and I think, if there had been any great cause of complaint, I should have heard of it, for my friends on 'Change are extremely glad to ventilate anything connected with the Salford Gas-Works. Mr. Waddington did state one grievance. He thought that there ought to be a greater difference made between the large and the small consumers, and he spoke of the want of pressure at his works; and I said I should like him to come to the Gas Committee and detail what he had said to me. I understood him to say that he and another gentleman would come, but neither he nor his friend came, and seeing him afterwards on 'Change, he said that he did not think it desirable to come. That was all after the bill had been deposited. I am acquainted with all that took place between the Barton Local Board and the Salford Corporation. We have never had any complaint from the local board as to the quality of the gas. The great grievance was the price. There was a minor one as to the lighting of the lamps in the district. Some thought that the lighting should begin on one evening at one end and on the next evening at the other, and so on alternately. There has been a long correspondence, but the sole grievance was the question of price. There was no reference to quality or quantity. At the final meeting, which took place in the mayor's parlour, they said, if the committee would reduce the price at Barton to the same as Salford they would withdraw the complaint which they had put forward. We have never had any other complaints whatever, and I think if there had been any such complaint as the one now made we should have heard of it in an official manner. When the new works of the corporation are in working order there will be an ample supply for Barton and for all the other districts.

Cross-examined by Mr. LITTLER: Salford is growing considerably. Nothing has been complained of, except the price and the matter of lighting the lamps. I do not remember anything being said about quality. I have been chairman since last December, but connected with the committee since 1862. We have under consideration a different mode of getting our contracts, so as to have a better supervision of them. I suppose that is because we are not quite satisfied with things as they are at present. I heard Mr. Waddington's evidence. I do not think for a moment that he has come here to mislead the committee. No doubt he has come here to speak of a genuine grievance. As he is the person who superintends the mill, he knows best about it, certainly. When he says that notwithstanding his new meter, he still has a bad light, and it has been so for some time, I wonder he did not make complaint. When his supply drops down from 700,000 to 577,000, I do not know what other interpretation to put upon the fact than that there was insufficient pressure. I cannot say anything as to the supply diminishing, as the consumers have gone on increasing. Although we might be paid a fair price for our mains in Barton, all the districts are so interwoven, that to separate it from Salford would cause, not only inconvenience, but loss. The real reason is not that we make a profit out of Barton and none out of Salford. We have laid out a great deal of money, and we think it unfair when we have made preparations to light districts which we are under obligation to light, that we should be deprived of one of them. The provision that we have made will last us for 20 years we hope. It is difficult to say whether we shall carry on both sets of works, or only the new one. I think we shall not give up the old works in Lamb Lane. The three members of the corporation live in the higher part of Barton.

Re-examined by Mr. VENABLES: Taking Barton away would cause us to suffer in the same way as we should if all our districts were taken away, only not in the same degree. There is no compensation provided for in the bill except what we should get by the sale of the mains. We are certainly not willing to give up this district.

Mr. *Thornton Andrews*, examined by Mr. VENABLES.

I have been engineer and general manager to the Swansea Gas-Works for 19 years, and am an Associate of the Institution of Civil Engineers. I have had large experience in the construction of gas-works. I have been to Barton and examined the district; I have made myself also acquainted with the works at Salford, and the recent extension in Liverpool Street. Those works will be able to provide gas for all the districts for 10 or 15 years. They will be able to make 3 million feet a day. £80,000 have been spent on the works with direct reference to Barton and other outlying districts. If Barton were taken away from the corporation, they would still want mains in Barton in order to carry gas to the districts beyond, where there are places to which they are bound to send gas. If, therefore, Barton acquired the right to make gas, they must have other mains. If the bill were passed, there would be two competing bodies, and a great waste of capital. I agree with Mr. Spice that it would be much cheaper to supply the district from the Salford works, than to build additional works. It must be for the interest of the corporation to stimulate consumption as long as they have to give the supply. I believe that some such plan as that recommended by Mr. Spice could be carried out at a comparatively small expense. I have made an estimate of what the cost would be to erect works at the proposed spot in Barton. On the basis of a production of 80 millions and sale of 72 millions per annum, the total cost would be £82,434. The smaller the amount of gas provided for, the larger is the proportionate outlay; so that for a production of 40 millions, with a sale of 36 millions, the sum of £55,906 would be required. On the basis of 18-candle gas at 4s. 6d. per 1000 cubic feet, the gross income would be £9740, the gross expenditure £8083, leaving a profit of £1657, including the depreciation on meters and building. That would not be sufficient. They must, therefore, charge 5s. 5d. to keep the concern solvent. The works at Swansea are in the hands of a company, not the corporation. We have different rates at different parts of the district. In the borough it is 4s., at another district 4s. 6d., and another 5s. 6d. Mumbles is supplied from Swansea, a distance of 5½ miles, and the loss of pressure is only 2-10ths. We have levels ranging from the sea line to a height of 296 feet. One place supplied is 96 feet below the level of the works. We supply one place which has the form of a double syphon—the gas ascends, then descends, and then ascends again, and we have no complaint from that district. As to the pressure at the burner, an Argand only requires 3-10ths; a bat's-wing or fishtail should have 5-10ths. Assuming that at Barton there is a less illuminating power than formerly, it would no doubt account for some of the complaints.

Cross-examined by Mr. LITTLER: I do not know that it would account for a butcher having such a light that the boys joked him about his candles; perhaps that was from the fittings. Some people are very loth to change their fittings. I do not know whether the illuminating power was such as to justify the complaints. I cannot give any reason for a consumer's supply dropping from 700,000 to 577,000 if he had a new meter; 19 candles is a good illuminating power, but if you have had 23, you would notice a great difference. A 150-light meter should supply 250 burners, but much depends on the size of the burner used. The place I spoke of, as like a double syphon, is 3 miles from Swansea. There is then a dead end.

Re-examined by Mr. VENABLES: We take our mains under a river to a low level where there is a mill; they then rise to a height of 100 feet, in order to supply another mill. As to a dead end, there must, of course, be a point where it stops. Gas is not allowed to escape into the open air, but must be stopped somewhere. The prices in my estimate are founded on actual experience of my own.

By the REFEREE: We have differential rates at Swansea.

Mr. *Cawley*, M.P., examined by Mr. VENABLES.

I am the member for Salford, and from 1853 to 1871 was a member of the corporation. I was chairman of the Gas Committee for some years, and was a member of it from its commencement. I am a civil engineer, and have had great experience in these matters. I reside near Barton, and have an office at Manchester. The gas of Salford has often been proved to be better than that of Manchester. The gas of Manchester is under the control of the corporation, and they have differential rates. That is the almost universal practice, and I think there ought always to be a differential rate. I do not think that the difference of charge between Salford and Barton is at all unreasonable. The 5s. charged to Barton was the result of negotiation. The Barton people appeared to be satisfied at the time. There is nothing in the extent of the district which makes it inconvenient that it should be supplied by one gas-work. The Liverpool Street works have been planned to supply the whole district, and a portion of the capital expended there has been expressly for the purpose of supplying Barton. There are two points between Salford and Barton where the population has greatly increased, but in many parts there are miles of road with a very small population indeed, where only a few street-lamps have to be supplied. The most populous part of Salford is supplied from a distinct main near the works. As the population increases rearrangements of the mains can be made without any difficulty, and new mains added if it be found that the old ones require relief. That would be much less expensive than building new works. Trafford Park is supplied from a main which is at the level of the low main which supplies Barton, and how they have had gas there when they have not at Barton I cannot tell. If the works proposed were constructed, it would still be necessary for the corporation to have mains running through Barton to supply the districts beyond, and also those to the north. A prudent corporation would certainly alter their present arrangement of pipes, if necessary, rather than go to the expense of erecting new works. As the population increases it is to the interest of the corporation to increase the number o f mains and to give all a good supply. A diminished pressure means diminished revenue. Besides having expended money in erecting new works, they would certainly be willing to make proper alteration in the mains. If this bill were passed the corporation would still have power to compete. That would not be to the public advantage. If the interest of Salford was bought it would have to be added to the cost of the Barton works. I see no difficulty in giving the requisite pressure all over the district supplied, and I have known it and the works for many years. The flow of gas into or out of Barton is all under control. There is no security which the local board can give of a good supply which Salford cannot also give. I know the nature of the complaints which have been made, and supposing them to have been well founded, there would have been no difficulty in redressing them if they had been brough before the committee. When I was chairman, every letter was entered in the book.

Cross-examined by Mr. LITTLER: I have never constructed gas-works myself, but have had to do with a great many. The population of Salford has been increasing very rapidly. Trafford Park stands at 95 feet. The main to that does rise 15 feet, and then stops at a dead end. Manchester charges 3s. 8d. in the borough, and 4s. 4d. to those immediately outside; but I do not think they make a proper profit by that payment.

Mr. *Samuel Hunter*, examined by Mr. TAHOURDIN.

I am a civil engineer, an Associate of the Institute of Civil Engineers, president of the Manchester Association of Gas Engineers, and manager of the Rochdale Corporation Gas-Works. I have had considerable experience in all matters relating to gas. The proper pressure at the burner is 3-10ths to 5-10ths. I know the works of the Salford Corporation, and, in my opinion there is no difficulty in supplying Barton from Salford. There is not a gas company in existence that is without complaints of some kind or another.

This closed the case for the petitioners.

Mr. VENABLES, in addressing the committee for the petitioners, said the whole case was entirely a surprise to them. Up to the time when they came into the room they had not the slightest idea that anybody imputed to them either a deficiency of supply, or of pressure, or anything of that kind. They had

received no complaints from Barton, and had no knowledge whatever that this part of the case would be brought before the notice of the committee. He had received no instructions to meet any such case, and the bill made no mention of it whatever. What the Local Board of Barton asked was to be allowed to come into the district and compete with the Salford Corporation, who had all the appliances needful for supplying it, and had lately spent £100,000 to enable them to do so properly. The question was, did Salford conduct its business so badly that Parliament ought to do what it had never hitherto done, allow another company to step in and compete with it? All the evidence showed that that was not the case. As to the quality of the gas, it was conceded on all hands that it was good; and, as to want of pressure, nothing was said about that till the parties appeared in the room. The local board desired an alteration in the differential rate, but to have such a rate was in accordance with the practice in every other place, and was manifestly just to all concerned. He would be content to rest the question of pressure on Mr. Spice's evidence, who did not seem disposed to place his opinions at the service of his clients for the moment, and he did not suggest the erection of new works, but rather such a rearrangement of the present as would properly supply all the surrounding districts; and, according to Mr. Cawley, who knew the place thoroughly, that could be easily done, and at a much less cost than erecting new works. For such a rearrangement the corporation were prepared. They would soon have 1200 retorts at their command, with all the apparatus needful for the proper working of them; the addition of a few extra mains, which, no doubt, would be necessary, was comparatively but a trifling expense. The alternative to that was the spending of between £30,000 and £50,000. If these works were erected, mains would be required. It was proposed to buy of Salford the mains already there, but the corporation would not sell them, for they were wanted for districts beyond. A second set of mains must therefore be laid down—a most unnecessary proceeding involving inconvenience to all concerned, and a large and unnecessary outlay of money. It had been asked what the corporation would lose by parting with Barton; £50,000 had been laid out on that district. Suppose upon that they only made 5 per cent., which was £2500 a year, they would lose the whole of that, and if this bill should become law, they would demand from Barton a sum for compensation, which would amply cover that. Did Barton suppose that the corporation would not compete? If so, they were mistaken. The corporation were on the spot and would compete, and, if possible, deprive them of the power of getting a single penny on their outlay till they had come to reasonable terms. It was admitted that if Barton happened to be within the municipal borough of Salford no change would be desired, but the relative positions of each remained the same. The parliamentary right of the corporation as to the supply of gas over the district, was the same as the municipal right to the government of their own body. Parliament had given that right, and had never sanctioned any corporation taking a thing of this kind away from another corporation, and to do it in this case would be to establish a precedent of a very dangerous kind. He contended that Parliament was not called upon to satisfy the demands of Barton on the matter of gas pressure, for the simple reason that if it resulted from the causes mentioned it could be remedied otherwise, and they had no ground to stand upon whatever.

Mr. LITTLER, who replied on behalf of the promoters, said it was idle for the petitioners to raise a dolorous cry, and say that they knew nothing of the charges which had been brought and proved against them. If they did not they should have known, for they had ample opportunity; but no doubt they became so accustomed to hear complaints, that they hardly knew that any were made. The promoters had proved that there had been a universal complaint. The only man the petitioners could have produced to rebut that grave charge was the out-door inspector. Yet, although he was in London, and in the room, he had never been called The question was, was there a well-founded complaint, such as would justify the committee in passing the bill? Many witnesses had declared that serious evils existed, and the witnesses on the other side had said that what had been so declared was true; and indeed no one could controvert it. Manufacturers, traders, private gentlemen, and small shopkeepers had all asserted that the gas was badly supplied to them—that they could not get the light they required, and that sometimes it went suddenly out. Yet it was contended by the other side that no redress was required. It was the policy of Parliament to give to any local authority where it was large enough, power to do for itself that which it was wise to do. Salford might plead possession, but that could not be sufficient reason for denying what was sought, when it was shown so conclusively that Barton had such real and tangible grievances. The witnesses differed on each side as to the pressure of gas in the mains, but the other side had not dared to bring forward any engineer of eminence to controvert the lucid testimony of Mr. Bramwell to the fact that the mains were so arranged that Barton could not possibly obtain a good supply. One of their own witnesses had said that 10 per cent. was an average leakage, and it had been proved that in their mains the average leakage was 14. As to the proper site for works supplying Barton, Salford, it had been shown, was most improper, whereas there could not be a better one than that proposed by the bill. Alderman Tysoe had said that they had spent money upon their works which would enable them to go on for 20 years. Then they were shamefully lavish in their expenditure of money. The corporation were very preposterous in all they did. They would not sell good gas; they would not let Barton alone; and they would not sell their mains when offered a good price for them. They only threatened that if Barton constructed works of its own, they would do all they could to bring them to ruin. When arbitration was proposed, even that was at once declined. He hoped the committee would not let the corporation continue to act like the dog in the manger—refuse to give the people of Barton the gas they ought to have, and yet not allow them to provide it for themselves. He was only proposing to take that away from the corporation which was a loss to them, and, at the same time, to benefit the consumers.

The CHAIRMAN said the committee found that the preamble of the bill was not proved.

TUESDAY, MARCH 23.

ASHTON-IN-MAKERFIELD LOCAL BOARD BILL.

(*Continued from page* 403.)

The committee reassembled this morning to deal with the clauses of this bill, which had been postponed.

Mr. MUNDELL, on the part of the promoters, said the only question remaining open was the compensation, and, as to that, he proposed a clause providing that—"The local board shall, during every day in the months of May, June, July, and August in every year, deliver into the Down Brook, at the following points, the following quantities of water—namely, 30,000 gallons out of reservoir No. 2, 15,000 gallons out of reservoir No. 3, and 5000 gallons out of reservoir No. 4." They also proposed that the local board should not be held responsible for any neglect to supply water to works lower down than the Liverpool Reformatory.

Mr. PRITCHARD, for the millowners, proposed that the clause should be amended as follows:—"The local board shall, during every day in the year, deliver into the Down Brook, at the point hereinafter mentioned, the following quantities of water—namely, 61,900 gallons out of reservoirs No. 1 and No. 2, to be delivered into the Down Brook at a point therein situate not more than 200 yards below the foot of the embankment of reservoir No. 2. In case the local board shall increase the storeage capacity of reservoirs No. 1 and No. 2, or either of them, by enlarging the same, or shall impound or take water from Down Brook, or the watershed thereof, otherwise than from reservoirs Nos. 1 and 2, then, and in every such case, the compensation water of 61,900 gallons shall be increased proportionately at the rate of one-third of all additional water so stored, impounded, or taken." He contended that the millowners were entitled to one-third of the available rainfall of the proposed gathering-ground, and that, if the storeage capacity was increased, the millowners were entitled to one-third of that increase.

Mr. *Hunter*, examined by Mr. PRITCHARD, said he did not consider the compensation water proposed to be given to the millowners sufficient. The ordinary rule was that one-third of the available rainfall should be given, and that compensation should be continued during the whole 12 months.

Mr. *Jackson*, consulting engineer to the Liverpool Water-Works, gave similar evidence.

The committee decided to pass the clause as proposed by the promoters, with the exception that the time for compensation should be extended to six months.

The opponents to the bill declining to express any opinion as to which two months should be added, the committee, on the suggestion of Mr. Mundell, added the months of September and October.

Mr. PRITCHARD applied for costs, but the application was refused.

Legal Intelligence.

COURT OF EXCHEQUER CHAMBER.—MONDAY, FEB. 8.

(*Before Lord Chief Justice* COLERIDGE, *and Justices* KEATING, QUAIN, LUSH, *and* ARCHIBALD.)

HOLKER *v.* PORRITT AND OTHERS—PROPRIETARY RIGHTS IN WATER.

This was an action for the disturbance of the plaintiff's rights in certain running waters. It was tried at the Manchester Summer Assizes, 1872, before the late Justice Willes, when the plaintiff obtained a verdict. A rule was subsequently obtained to set aside the verdict, and to enter the same for the defendant. Cause was shown against the rule before the Court of Exchequer in January, 1873, when the judgment of the court was for the plaintiff, and the rule was discharged. On appeal to the Exchequer Chamber, the point for the opinion of the court was whether the plaintiff was entitled to the flow of certain water claimed in the declaration, and had a right to maintain an action for obstructing the flow against the defendants. The stream in question took its rise in the land of the defendants, and flowed in one course to a certain point near a farm called "Edge Farm," where it was divided into two streams by a stone or "fedder." One of these streams flowed into the Buckden Brook, and the other flowed to the plaintiff's paper-mill, a distance of about half a mile. This latter stream originally flowed into a watering-trough, the overflow of which was diffused over the land, and discharged itself by percolation. The stream had existed in this state from time immemorial; but in 1846 or 1847, one Oliver Walker, who at that time was copyholder of all the land, from the point near the Edge Farm to the plaintiff's paper-mill, constructed certain reservoirs for the storeage of the water for the use of the mill, and also an underground stone drain from the trough to the reservoirs for the purpose of carrying the overflow of the water from the trough to the reservoirs. In 1867 the mill was surrendered to the plaintiff, together with the full use and enjoyment of all springs and streams of water on the land of Walker. The grievance complained of, as the subject of the action, was an obstruction by the defendants of the flow of water near the springs.

Mr. HERSCHELL, Q.C., Mr. POPE, Q.C., and Mr. BAYLIS supported the appeal; the SOLICITOR-GENERAL (Sir J. Holker, Q.C.), Mr. KEMPLAY, Q.C., and Mr. GORST appeared for the respondent.

Justice LUSH, in delivering the judgment of the court, stated the facts of the case, and then said: Upon the hearing before us, at the sittings after the last term, two questions were principally argued—first, whether the conveyance of the surplus water, by means of the drain, from the watering-trough to the mill, is to be considered as a prolongation of the stream entitling the millowner to the ordinary riparian rights there; and secondly, if not, whether by the enjoyment without interruption for more than 20 years, first by Walker, and afterwards by the plaintiff, the latter had acquired a right to the water as an easement by virtue of the Prescription Act. Upon consideration of the peculiar facts of this case, we think that the plaintiff's title rests on a broader ground, and that he need not resort either to the theory of an extension of the stream or to the Prescription Act. It must be taken, upon the facts stated, that the owner of Edge Farm had a prescriptive right to the maintenance of the stone or fedder, and of the diversion by means of it of part of the stream to, and for the exclusive use of, the farm. The water which came down to him at the farm was his own, to use as he pleased. There was no one entitled to share with him in its use, and no one who could call him to account for any use which he chose to make of it there. In this respect his position was different from that of a riparian owner, who only shared the use of the water in common with other riparian owners. In collecting the overflow at the trough and conveying it to the mill, he clearly did nothing in derogation of the rights of any other person, or which he was not entitled to do in the lawful use and enjoyment of his own property. Nor did he thereby lose any right which he theretofore had. While the water overflowed the trough, and ran to waste, he had a right to complain of any undue diversion or obstruction of the stream which diminished the accustomed supply to the trough, and he acquired no greater right by conveying it to the mill. No doubt the consequence to a wrong-doer became more serious after the drain was made than it was before, because the wrongful act was more injurious, and larger damages would have to be paid for it; but it is a fallacy to say that a man's rights are abridged if, when he abuses them, he has to make larger compensation. It is the necessary effect of every appropriation of running water to a new and more benefical use, that a wrongful diversion or obstruction entails a larger measure of liability. It is established by many authorities which are collected in and confirmed by *Mason v. Hill* (5 B. & Ad. 1), that as soon as the owner of land on a stream has appropriated the water to a beneficial use he may sue for the injury done to him in respect of such new use. In that case the proprietor, having appropriated the stream to the use of a mill newly erected, was held entitled to recover from a proprietor higher up the stream for the injury to his mill, occasioned by the wrongful diversion of the stream, although before the mill was built the wrong-doer would only have been liable to nominal damages. If, therefore, Walker had been in possession of the mill in question, it is clear to us that he could have brought this action, not because he happened to be at the same time riparian owner higher up than the mill, and also owner of the mill, but simply as owner of the mill. And there is no conceivable reason why the plaintiff should not have the same right, inasmuch as he is surrenderee of the mill with all the water rights annexed and appurtenant to it. Walker has chosen to create a servitude on his own land, but none has been created, or attempted to be created, on the lands or riparian rights of the defendants. None of the authorities cited conflict in the least degree with this view. In the case of *Stockport Water-Works Company v. Porter* (3 H. & C. 300, 12 W. R. C. L. Dig. 119), the water was taken directly from the stream, in the regular flow of which the proprietors below had an interest, and it is clear that such a use of the water could only grow into a right by 20 years enjoyment. Whether that case was rightly decided or not, whether the grounds upon which the majority decided can be maintained, or whether it is distinguishable from *Nuttall v. Bracewell* (L. R. 2 Ex. 8, 15 W. R. C. L. Dig. 125), we need not now consider. The present case stands clear both of the difficulty and the reasoning in that case, and we have no hesitation in holding, for the reasons we have given, that the judgment of the court below ought to be affirmed.

Judgment affirmed accordingly.

MIDLAND CIRCUIT, LEEDS.—MARCH 27 AND 29.

(*Before Lord Chief Justice* COLERIDGE *and a Special Jury.*)

WRIGHT AND ANOTHER *v.* CLAYTON AND ANOTHER.

Mr. MAULE, Q. C., and Mr. E. TINDALL ATKINSON appeared for the plaintiffs; Mr. DIGBY SEYMOUR, Q. C., and Mr CAVE for the defendants.

The plaintiffs are ironfounders at Keighley, and the defendants are gasholder makers at Hunslet. The action was brought to recover £569 2s. 7d., the balance of a large account. In 1874 the defendants had entered into a contract for the erection of gas-works at Shipley, and for the purpose of executing their contract they ordered certain standards or pillars, guides, and weights from the plaintiffs. These were supplied, accepted, and used, the price agreed upon being £694. Some time afterwards the plaintiffs had a similar contract to execute for the Aire and Calder Navigation Company, at Goole, and they instructed the defendants to furnish them with the necessary castings. In the latter case the price was to be £9 per ton, excepting for the weights, which were to be charged at the rate of £8 per ton. The castings for Goole were duly supplied, and the total weight being 40 tons 17 cwt., the sum due was £375 2s. 7d. On the two contracts the total amount was £1069. Of this amount £500 was paid on account, and the plaintiffs not receiving any further payment, the present proceedings were instituted. Subsequently an additional £500 was paid into court by the defendants, and the sum remaining in dispute was therefore £69 2s. 7d.

The defendants pleaded a set-off of about £22 for the alteration of certain pulleys and the supply of bolts not in the contract.

After several witnesses had been examined, the case seemed to narrow itself into one merely of account, and ultimately a verdict was entered for the plaintiffs for £40.

HAMMERSMITH POLICE COURT.—SATURDAY, APRIL 3.

(*Before Mr.* INGHAM.)

CAUTION TO GAS CONSUMERS.

Henry Ward and *Samuel Hoyland*, well-dressed men, who were described as pedlars, were charged with fraud.

William Tomlin, butler to Mrs. Mary Elizabeth Molyneux, of 16, Prince of Wales Terrace, Kensington, said on Thursday last the prisoner Hoyland came to the house, and said he came from the gas company, owing to some bills which were circulated a few days ago. Witness told Mrs. Molyneux, who said she threw them into the rubbish basket. He returned and told him Mrs. Molyneux would not see him. He said he must see her, as he was the engineer from the gas company. He told Mrs. Molyneux, and showed him into the back room where she was sitting. He (prisoner) said he was in the employ of the gas company to serve out new gas-burners, that she would be obliged to have them on, and if she did not the company would not reduce the price of gas. Mrs. Molyneux agreed to take two dozen burners, but the prisoner had not more than 17. She paid him £2 2s. 6d., and he promised to send the remaining seven burners in the afternoon. [A receipt which the prisoner gave was handed in. It was written as a receipt for "Ward and Co.," gas engineers.] The witness said on Friday morning Ward called with eight burners. He said he came from the engineer who called on Thursday. He followed the prisoner away, and saw him join Hoyland, who was waiting for him in the High Street. He gave them in charge.

Mr. *William Carter*, chief inspector of The Gaslight and Coke Company, said it was the only company which supplied gas to the neighbourhood. He did not know the prisoners. Hoyland had never been employed as an engineer for the company. Witness had caused circulars to be sent out relating to the supply of gas-burners. In consequence of the gas being changed from cannel to common, new burners are required in many cases. The burners sold to Mrs. Molyneux were not issued by the company, but they would be suitable for the common gas in shops, and places which required a large flame. They were not so suitable in private houses.

Mr. INGHAM remanded the prisoners, and consented to take bail.

Miscellaneous News.

TYNEMOUTH GAS COMPANY.

The Annual Meeting was held at North Shields on the 25th ult.—Mr. G. WILLIAMSON in the chair.

The SECRETARY (Mr. Atkinson) read the following report:—

The directors, in submitting the annual accounts of the company for the year ending Dec. 31, 1874, regret that the balance of profit, amounting to £4165 11s. 1d. on the 12 months, again falls short of the amount required to pay the customary dividends, and that £669 18s. 11d. will have to be taken from the balance to the credit of this account from former years to make £4835 10s., the sum required to pay the statutory dividends of 10 per cent. on the ordinary stock and 7 per cent. on the £10 shares. This the directors recommend to be done, which will still leave a balance of £89 3s. 3d. to the credit of profit and loss account to be carried forward.

The ordinary repairs of wear and tear and a number of new retorts will be required during the summer to keep the works in a satisfactory state. The company have been put to a very considerable expense for main-pipes required by the corporation to be laid in unproductive districts, and are now called upon to lay mains along a third road leading to Percy Main, which will not only require a large sum of money, but also a great expenditure of gas to keep these mains filled for the supply of public lamps, the price received for lighting which pays only a small per centage on the cost of the pipes.

The illuminating power of the gas has been more than the standard required by the Act of Parliament.

The Town Council have asked the directors to reduce the price of the gas supplied to private consumers 6d. per 1000 cubic feet, and also that the charge for the public lamps should be reduced 1d. per week. The directors replied that they are very anxious to reduce the price of gas, but under present circumstances they feel they could not, in justice to the shareholders, do so.

The financial statement showed the total current expenses amounted to £13,453 14s. 5d., and the total revenue to £17,619 5s. 6d., leaving a balance of profit of £4165 11s. 1d.

On the motion of the CHAIRMAN, seconded by Mr. MIDDLETON, the report was adopted.

The dividends recommended by the board were declared; the retiring directors and auditor were re-elected, and votes of thanks were awarded to the chairman, the directors, the auditors, and the secretary.

THE GASLIGHT AND COKE COMPANY.

The Half-Yearly Ordinary General Meeting of Shareholders was held at the Works, Horseferry Road, Westminster, on Friday, April 2—SIMON ADAMS BECK, Esq., the governor, presiding.

The SECRETARY (Mr. J. Orwell Phillips) read the advertisement convening the meeting, and the minutes of the last general and special meetings. The corporate seal was affixed to the register of shareholders, and the following report and statements of account were presented, and taken as read:—

The directors must refer the proprietors to their last half-yearly report.

In submitting the usual statements of account for the half year ending on the 31st of December last, the directors deem it inexpedient to limit their report to the same period, because events of great interest to proprietors in metropolitan gas undertakings have occurred since the commencement of the present year, of which it is desirable that the earliest information should be given.

The Metropolitan Board of Works, assisted by the Corporation of London, have laid before Parliament three bills affecting the supply of gas to the metropolis, as follows:—

1. The bill (alluded to in the last report of the directors) the object of which was power to construct works to enable the local authorities to compete, out of public funds, with the private enterprise of the existing gas companies.

2. A bill to enable the same bodies to acquire by compulsion, and on terms fixed by themselves, the undertakings of the existing gas companies.

3. A bill to secure to the inhabitants of the metropolis uniformity of regulations in the supply of gas.

As regards the bill numbered 1, although the Metropolitan Board of Works in its preparation and introduction have incurred an expenditure of thousands of pounds, the whole of which must be borne by the ratepayers of London, it is more than doubtful whether there ever was the smallest intention on the part of its promoters to prosecute the measure, the only real object of its introduction appearing to have been the depreciation of the property of the several gas companies, in order to render them an easier prey, should any chance present itself, of the passing of the second-mentioned (the purchase) bill. The directors were not left long in doubt as regards the intention of the local authorities with reference to the first bill, which was, on the 16th of February, and before any show of opposition was made to it, withdrawn from the House.

The bill numbered 2 stood for second reading on the 23rd of February, and on the day previous the local authorities positively proclaimed their intention of proceeding with it. Within half an hour of this assertion they gave notice to withdraw the bill, and the next day it was withdrawn accordingly. The directors, as representing the company, are ratepayers in London to a very large amount, and they urge upon metropolitan proprietors the necessity for a narrow investigation of the powers under which public money, of which they individually and collectively are the contributors, is wasted by the Metropolitan Board of Works in the promotion of such schemes as the foregoing.

It is right that the general body of ratepayers and gas consumers of London, as well as the proprietors in this company, should be made aware that, although at the instance of the local authorities the gravest responsibility and the most onerous conditions of supply were imposed on the company by the City of London Gas Act, 1868, which limited the price of gas to an amount which it was foreseen might be, and has indeed since been, found impossible to be maintained under every state of circumstances, the local authorities, in the bills just alluded to, did not contemplate the placing of themselves under similar restrictions, the price which they vaguely proposed to fix being "the lowest which the requirements of their Act would permit;" and, while the stringency of the enactments imposed upon the company by the City of London Gas Act, 1868, as to purity, is of the most decided character, it is remarkable that the bills promoted by the Metropolitan Board of Works and the Corporation of London on their own behalf were altogether silent on the subject, and that those bodies, in fact, sought power to supply to the public what they chose, to charge for it what they liked, and to place themselves under no penal provisions of any description should they fail in the performance of the duty they professed a desire to undertake.

With a view to test the sincerity of the Metropolitan Board of Works and the Corporation of London in their expressed wish to acquire the gas-works of London at a fair price, the directors introduced into Parliament a bill containing (*inter alia*) powers to those bodies to purchase the company's undertaking, the conditions of purchase fixed by the bill being that the proprietors should receive, from the local authorities, the same income which they are now deriving from the money they have invested in the undertaking on the faith of Acts of Parliament. This proposition was found to be so little in accord with the ideas of purchase entertained by the Metropolitan Board of Works and the Corporation of London, that they deemed it dangerous to allow such a measure to be laid before a committee; and a preliminary objection having, the directors regret to state, presented itself, the local authorities hastened to avail themselves of it. Although the bill, in other respects, was one largely in the interests of the public, and in its entirety was framed to carry out the views of the Board of Trade, it has been rejected, at the instance of the self-constituted protectors of the public, on the technical ground of non-compliance with the Standing Orders of Parliament.

The only general measure remaining before the House is the bill of the local authorities for placing the whole of the gas companies of London under uniform regulations. The mode in which it is proposed to be carried out is arbitrary and unfair towards the companies. The directors stated in their last report that "Parliament, in the year 1868, while insisting upon the best possible terms for the consumer, was just, and careful to provide that its stringent legislation was not altogether such as should preclude the company, at an exceptional period, from all hope of dividend," and, in pursuance of that equitable view, adopted the clauses of the City of London Gas Act, 1868, as drawn by the framers of the Act themselves, which "enabled the company to demand from the Board of Trade a revision of price should it be unable to earn its dividend at the low maximum accorded" by the Act, which the proprietors are aware was promoted by representatives of the public and adversely to the interests of the companies affected by it. Whether the cost of coal or other raw material be doubled or quadrupled appears to the local authorities, so long as gas is to be supplied by a company, to be a matter of indifference; and while, as has been already seen, they did not propose by their own bills any limitation of price, an organized attack has been made on the revision clauses accepted by this company at the instance of Lord Cardwell's committee; but, as the directors have already announced, "the local authorities must understand most distinctly that the company will not tamely relinquish the basis afforded by the Act of 1868," but will contest to the very uttermost the proposed repeal of the company's only safeguard—the revision clauses. The bill contains numerous objectionable provisions, to not one of which did the promoters propose to subject themselves, and it need hardly be said that the application of those provisions to the company will be strongly, and it is believed successfully, resisted, because a compact having been deliberately entered into by the local authorities with the company, and solemnly ratified by Parliament in 1868, the directors entertain the belief that, on the representations and application of one only of those parties, the House will now hesitate to disturb that compact.

The directors refer the shareholders to the exposition of the provisions of the General Act of 1868, and their own policy, given in their last report, and they now intimate that, if the action taken by the Metropolitan Board of Works and the Corporation of London result, as it unquestionably will do, in the squandering in litigation of many thousands of pounds, the whole of which, be it remembered, will have to be borne by the gas consumers and ratepayers of London, such an expenditure will rest at the door of those two bodies, whom alone the public will have to thank should their operations render necessary an application to the Board of Trade to increase, in the next year, the parliamentary price of gas. Such an application might very properly have been made by the directors in the present year, because, apart from all question of the insurance-fund, in respect of which no provision has been made, the statutory dividend is not absolutely assured; but they have preferred to run some risk of a deficiency of profit to the proprietors (most of them consumers of gas themselves), rather than inflict an increase of price upon the consumers throughout their districts. It will be interesting to the proprietors to know the painstaking accuracy with which the Board of Trade Commissioners have investigated the accounts and estimates of the company, and to learn that, in the award made by the commissioners for the year 1874, the price of gas fixed by them, in a rental of upwards of a million sterling per annum, proved on the 31st of December to differ from their estimate of the requirements of the company made at the commencement of the year, by the sum of £534 only. No greater tribute than the recital of this fact can be paid to the industry and sagacity of the commissioners.

It has been stated in the councils of the Metropolitan Board of Works and the Corporation of London, and repeated again and again, that the cost of coal, whatever it may be, is unimportant to a gas company, because the value of coke is always commensurate with it. The fallacy of this doctrine is demonstrated by the recent coke returns of every gas company in London, and, as regards this company in particular, it may be briefly stated that, while in the latter half of the year 1874 the company paid for coal less than in the same period of 1873 the sum of £23,800, the produce of coke sales for that half of the year 1874 was lower than for the corresponding period of the year 1873 by no less a sum than £54,200.

The manufacture and general business of the company is proceeding satisfactorily, and calls for no especial comment beyond the announcement of the fact that the increase in the consumption of gas in the company's district is proceeding at so rapid a rate as to render large and immediate extensions of works necessary to keep pace with it. These additions to plant are the more imperatively required in consequence of the closing for manufacture of the Westminster and Blackfriars stations. As regards the latter, the directors have the pleasure to announce that a contract for the sale of the site of the works has been entered into with the Corporation of London for the sum of £170,000, which when paid over will be applied in reduction of capital.

It will be seen from the annexed statement of accounts that the result of the half year's working admits of a dividend on the ordinary shares at the rate of 10 per cent. per annum. The mode in which the directors had dealt with a portion of the expenses of the stokers strike, at the close of the year 1873, was challenged by the Corporation of London before the Revision Commissioners at their sitting in the commencement of the year following. The matter had been already disposed of by the Government auditor, but, at the instance of the Corporation of London, the question was referred by the Board of Trade to the Law Officers of the Crown, who expressed their opinion that the sum of £5024 17s. 11d., charged to revenue in the year 1873, should more properly have been carried to the insurance-fund out of the profits of that year. The directors, of course, bow to such an opinion, and the Government auditor having given his certificate in accordance with it, a deduction to that small extent will be made from the dividend now due, the warrants for which will be forwarded to the proprietors as usual.

The directors, in conclusion, express their regret at the loss they have sustained through the death of their late colleague, Mr. Hadland, whose connexion with the City of London Gas Company, of which latterly he was the deputy-chairman, dated from the year 1849.

No. 1.—STATEMENT OF SHARE CAPITAL, *on Dec.* 31, 1874.

Acts of Parliament relating to the raising of Capital.	Description of Capital.	Maximum Dividend authorized.	Number of Shares issued.	Nominal Amount of Shares.	Called up per Share.	Total paid up.	Remaining to be called up and unissued.	Total Amount authorized.
The Gaslight and Coke Company's Act, 1868	Ordinary A.	10 per cent.	90,000	£10	£10	£900,000	..	£900,000
	Preference A.	5 per cent., with option of conversion.	25,000	10	10	250,000	..	250,000
			20,000	10	10	200,000	..	200,000
			20,000	10	10	200,000	..	200,000
The Victoria Docks Gas Act, 1857	Ditto.	Ditto.	10,000	10	10	100,000	..	100,000
The City of London Gas Company's Act, 1859	Ordinary A.	10 per cent.	30,000	10	10	300,000	..	300,000
	B.	4 per cent.	10,000	10	10	100,000	..	100,000
The Great Central Gas Consumers Act, 1851	Preference C.	10 per cent.	20,000	10	10	200,000	..	200,000
The Equitable Gaslight Company's Act, 1842	Ditto D.	10 per cent.	12,000	25	25	300,000	..	300,000
The Companies Act, 1862, as applied to the Western Gaslight Company, Limited	Ordinary A.	10 per cent.	60,000	10	10	600,000	..	600,000
The Gaslight and Coke Company's Act, 1872	..	10 per cent.	..	..	..	..	1,000,000	1,000,000
						£3,150,000	£1,000,000	£4,150,000

No. 2.—STATEMENT OF LOAN CAPITAL, *on Dec.* 31, 1874.

Acts of Parliament authorizing the Loan Capital.	Description of Loan.	Rates per Cent. of Interest.					Total Amount borrowed.	Remaining to be borrowed.	Total Amount authorized.
		4 per Cent.	4¼ per Cent.	4½ per Cent.	4¾ per Cent.	5 per Cent.			
The Gaslight and Coke Company's Act, 1868	Debentures.	..	..	£162,500	£300,000	..	£462,500	..	£462,500
The City of London Gas Company's Act, 1859	Ditto.	£1,000	£4,400	40,345	..	£14,255	60,000	..	60,000
The Great Central Gas Consumers Act, 1851	Ditto.	2,000	10,050	53,950	..	..	66,000	..	66,000
The Victoria Docks Gas Act, 1857	Ditto.	..	..	25,000	..	..	25,000	..	25,000
The Companies Act, 1862, as applied to the Western Gaslight Company, Limited	Debenture stock.	..	..	200,000	..	..	200,000	..	200,000
The Gaslight and Coke Company's Act, 1872	..	..	..	..	..	..	..	£250,000	250,000
		£3,000	£14,450	£481,795	£300,000	£14,255	£813,500	£250,000	£1,063,500

No. 3.—CAPITAL ACCOUNT.

Dr. *Cr.*

	Expended this Half Year.	Total Expenditure to Dec. 31, 1874.		Certified Receipts to June 30, 1874.	Received since that date.	Total Receipts to Dec. 31, 1874.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
To Expenditure to June 30, 1874	..	3,641,668 11 5	By Ordinary shares, of £10 each	1,300,000 0 0	..	1,300,000 0 0
Expenditure during half year to Dec. 31, 1874—viz.:			B shares, of £10 each	100,000 0 0	..	100,000 0 0
Lands acquired, including law charges	728 14 10		C ditto, ditto	200,000 0 0	..	200,000 0 0
Buildings and machinery in extension of works	130,805 16 3		5 per ct. pref. shares, of £10 each	250,000 0 0	..	250,000 0 0
New and additional mains and service-pipes	57,225 7 11		Ditto ditto, second issue	200,000 0 0	..	200,000 0 0
New and additional meters	3,117 14 6		Ditto ditto, third ditto	300,000 0 0	..	300,000 0 0
	191,877 13 6		D shares, of £25 each	300,000 0 0	..	300,000 0 0
Cr.			Debentures	613,500 0 0	..	613,500 0 0
By Sale of disused plant	2,631 10 1		Debenture stock	196,955 0 0	3,045 0 0	200,000 0 0
		189,246 3 5		3,960,455 0 0	3,045 0 0	
		3,830,914 14 10				
To Balance of capital account		132,585 5 2				
		3,963,500 0 0				3,963,500 0 0

No. 4.—REVENUE ACCOUNT.

Dr. *Cr.*

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Manufacture of gas—			By Sale of gas—		
Coals, including dues, carriage, unloading, and trimming, &c. (*see* Account No. 9)	280,240 11 4		Common gas, per meter, at 5s. and 3s. 9d. per 1000 cubic feet	443,401 8 9	
Salaries of superintendents and other officers at works	3,594 3 4		Cannel gas, per meter, at 6s. 3d. and 4s. 8d. per 1000 cubic feet	59,452 16 1	
Wages (carbonizing)	37,974 3 6		Sold in bulk (cannel gas), at 4s. 7d. per 1000 cubic feet	6,797 7 0	
Purification, including £3369 5s. 11d. for labour	9,371 10 11		Public lighting and under contracts—		
Repair and maintenance of works and plant, materials, and labour; less received for old materials, £4051 13s. 1d.	48,737 13 10		Common gas	29,350 16 4	
		379,928 7 11	Cannel gas	6,916 14 1	
Distribution of gas—			(*see* Statement No. 11)		545,919 2 3
Salaries and wages of officers (including rental clerks)	5,857 10 7		Rental of meters	..	5,390 0 0
Repair, maintenance, and renewal of mains and service-pipes	16,832 10 4		Residual products—		
Repairs and renewals of meters	14,123 18 10		Coke, less £7897 2s. 11d. for labour, &c.	57,404 10 6	
		36,813 19 9	Breeze, less £188 6s. 9d. for ditto	1,923 4 1	
Public lamps—			Tar, less £108 16s. 3d. for ditto	21,671 8 11	
Lighting and repairing	..	6,915 14 1	Ammoniacal liquor, less £93 7s. 4d. for ditto	22,645 13 0	
					103,644 16 6
Rents, rates, and taxes—			Rents receivable	..	1,972 18 7
Rents payable	3,250 14 0		Transfer fees	..	109 14 6
Rates and taxes	10,066 18 11		Canteen account	..	240 14 3
		13,317 12 11			
Management—					
Directors allowance	2,500 0 0				
Company's auditors	150 0 0				
Salaries of secretary, accountant, and clerks	2,148 15 0				
Collectors commission	4,625 8 2				
Stationery and printing	1,346 16 7				
General charges	885 5 9				
		11,656 5 6			
Law charges	..	864 15 2			
Revision Commission costs (on account)	..	202 15 1			
Parliamentary charges—oppositions	..	4 16 10			
Bad debts	..	1,943 10 5			
Depreciation-fund, for works on leasehold lands	..	372 10 0			
Superannuation allowances under amalgamation schemes, and annuities	..	7,205 15 10			
Public officers—					
Gas referees and official auditor	489 12 6				
Public testing-stations	54 4 1				
		543 16 7			
		459,770 0 1			
Balance carried to net revenue account (No. 5)		197,507 6 0			
		£657,277 6 1			£657,277 6 1

No. 5.—NET REVENUE ACCOUNT.

Dr. *Cr.*

	£ s. d.		£ s. d.	£ s. d.
To Interest on debentures and debenture stock accrued to Dec. 31	18,673 11 11	By Balance from last account	£121,318 14 2	
Dividend on B shares, at 4 per cent. £2,000 0 0		Less dividend on ordinary capital for the half year to June 30, 1874	90,000 0 0	
Ditto on C ditto, at 10 ditto 10,000 0 0				34,318 14 2
Ditto on D ditto, at 10 ditto 15,000 0 0		Revenue account		197,507 6 0
Ditto on preference shares, at 5 per cent. 18,750 0 0				
	45,750 0 0			
Interest on temporary loans	217 0 3			
Defalcation account (Great Central Gas Consumers Company)	2,500 0 0			
Balance	164,680 8 0			
	£231,826 0 2			£231,826 0 2

No. 6.—INSURANCE-FUND ACCOUNT.

Dr.	£ s. d.		*Cr.* £ s. d.
To Balance on Dec. 31, 1874	31,807 15 9	By Balance on June 30, 1874	31,304 10 6
		Interest on amount invested	503 5 3
	31,807 15 9		31,807 15 9

No. 7.—DEPRECIATION-FUND ACCOUNT (for Works on Leasehold Lands).

Dr.	£ s. d.		*Cr.* £ s. d.
To Balance on Dec. 31, 1874	5,220 9 11	By Balance on June 30, 1874	4,776 11 4
		Amount brought from revenue account for the half year	372 10 0
		Interest on amount invested	71 8 7
	5,220 9 11		5,220 9 11

No. 8.—DEFALCATION ACCOUNT (Great Central Gas Consumers Company).

Dr.	£ s. d.		*Cr.* £ s. d.
To Balance on June 30, 1874	7,358 7 5	By Amount brought from net revenue account, for the half year to Dec. 31, 1874	2,500 0 0
		Balance	4,858 7 5
	7,358 7 5		7,358 7 5

No. 9.—STATEMENT OF COALS USED, &c.

Description of Coal.	In Store, June 30, 1874.	Received during Half Year.	Carbonized during Half Year.	Used during Half Year.	In Store, Dec. 31, 1874.
	Tons.	Tons.	Tons.	Tons.	Tons.
Common	55,746	190,493	214,191	117	31,931
Cannel	21,639	11,790	20,644	30	12,755

No. 10.—STATEMENT OF RESIDUAL PRODUCTS.

	In Store, June 30, 1874.	Made during Half Year.	Used in Manufacture during Half Year.	Sold during Half Year.	In Store, Dec. 31, 1874.
Coke—chaldrons	25,328	207,166	68,860	144,516	19,118
Breeze—ditto	2,576	22,777	..	16,838	8,515
Tar—gallons	94,502	2,478,113	..	2,242,370	330,245
Ammoniacal liquor—butts of 108 gallons	5,152	61,164	..	58,835	7,481

No. 11.—STATEMENT OF GAS MADE, SOLD, &c.

Description of Gas.	Quantity Made. (Measured.)	Quantity Sold. Public Lights and under Contracts. (Estimated.)	Quantity Sold. Private Lights (per Meter).	Quantity Sold. Total Quantity Sold.	Quantity used on Works, &c.	Total Quantity accounted for.	Quantity not accounted for.	Number of Public Lamps.
	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	..
Common	2,090,796	101,018	1,783,595	1,884,613	20,908	1,905,521	185,275	11,755
Cannel	278,543	18,552	*221,088	239,640	4,357	243,997	34,546	3,335

* This includes the quantity sold in bulk.

GENERAL BALANCE-SHEET *on Dec.* 31, 1874.

Dr.	£ s. d.	£ s. d.	*Cr.* £ s. d.
To Capital—		By Cash at bankers	.. 20,839 14 1
Balance at credit thereof (Account No. 3)	132,585 5 2	Amount invested—	
Debenture stock subscriptions	7,145 0 0	Insurance-fund	31,807 15 9
Net revenue—		Depreciation-fund	5,220 9 11
Balance at credit thereof (Account No. 5)	164,680 8 0		37,028 5 8
Insurance-fund account—		Stores on hand—viz.:	
Balance at credit thereof (Account No. 6)	31,807 15 9	Coals	55,839 18 3
Depreciation-fund (for works on leasehold lands)—		Coke and breeze	8,030 18 0
Balance at credit thereof (Account No. 7)	5,220 9 11	Tar and ammoniacal liquor	5,482 4 7
Debenture interest for amount due to Dec. 31, 1874	16,003 15 6	Sundry stores	45,867 19 3
Preference dividends for amount due to Dec. 31, 1874	45,750 0 0		115,221 0 1
Unclaimed dividends	5,820 2 11	Accounts due to the company—viz.:	
Sundry tradesmen and others, for amount due for coals, stores, and sundries	99,994 13 10	Gas and meter rental—	
Temporary loan	90,000 0 0	Quarter ending Dec. 31, 1874	363,843 8 9
Benevolent-fund	1,471 5 1	Arrears outstanding	6,256 5 9
			370,099 14 6
		Coke and other residual products	44,396 0 8
		Sundry accounts	921 13 9
			415,417 8 11
		Retiring allowances	.. 6,564 0 0
		Ship *Dispatch*	.. 550 0 0
		Defalcation account (Great Central Gas Consumers Company)—	
		Balance at debit thereof (Account No. 8)	.. 4,858 7 5
	600,478 16 2		600,478 16 2

The GOVERNOR: Gentlemen, I have now to move—"That this meeting do agree with and confirm the report of the directors, and the auditors report and statement of the accounts of the company so transmitted." It is not long since I had the honour and pleasure of meeting you before. On that occasion I had some strong remarks to make upon a public body, which has strenuously opposed and calumniated this company, and I am sorry now to say that this conduct is still pursued. If you recollect, I told you that that body had introduced certain bills into Parliament—first of all, a bill to buy up our works compulsorily, upon their own terms; secondly, a bill to authorize them to erect competing works; and thirdly, a bill for regulating this and other companies. I took the liberty at that time of stating that I, in common with my brother directors, considered those bills to be shams and delusions, and that they were only brought forward with a view to depreciate the value of the shares of the company in order that the board might buy up the concern on their own terms, if, indeed, they meant to buy at all; but that we had a strong conviction they never intended to deal with them or to supply the public with gas. You will recollect I told you that in one of their bills—that by which they proposed to establish works of their own, not in competition with us—they carefully avoided defining any standard of illuminating power, any maximum of price, or any limit of impurity, although they called upon us most strenuously to perform the obligations we were placed under by Act of Parliament, and were always complaining that we wronged the public, because, as they alleged, we did not perform those obligations. Nothing could be more untrue than this last statement of theirs, for we have always been careful to fulfil all the duties imposed upon us by the Legislature, and you may be sure that if we had not done so, their officers, or the officers of the Government, would speedily have called us to account. In fact, we could not help ourselves, we were bound to do it, whether we meant to act honestly to the public or not; we had no alternative, for the board had the power, in case of failure, of inflicting upon us heavy penalties. That they never had done so was because they never had the opportunity, seeing that we always carefully regarded the interests of the public, and performed all the duties the Legislature has thought fit to impose upon us. But the board have made all sorts of charges against us. One was, that we were creating capital unnecessarily, and that instead of raising it at 5 per cent., we were raising it at 10 per cent. This, again, was another of their misstatements. By our Act of Parliament we could have raised all our share capital in the first instance—we must raise a portion of it before we can create a shilling of loan capital, but we might have raised the whole at once. What did we do? Did we look to our own interests only, or did we take the interests of the public into consideration at the same time? Why, gentlemen, if you look at our accounts, or if the parties who make these charges would look at our accounts, they would see at once the falsity of their statements. You will remember that the proportion of loan to share capital is fixed by Act of Parliament, and we cannot raise any loan capital until we have raised a certain amount of share capital. But if you examine these accounts, you will find that whereas our authorized share capital is £4,150,000, and our authorized loan capital is £1,063 000, the amount we have actually raised is £3,150,000 of share capital and £813,000 of loan capital, which is as nearly as possible in the exact proportion authorized. We might have raised a great deal more capital by the issue of shares than we have done, but we did not think it right, as far as the public are concerned, to do so, and this charge, therefore, falls to the ground. They have no pretext for charging us with neglecting our duty in this respect, or of saddling the public with a greater amount of interest than was absolutely necessary. Independently of this—and mind, these accounts are published—I call your attention to the rates at which we have raised our loan capital. You will find that one small amount has been borrowed at 5 per cent., but in every other case the rate of interest is from 4 to 4¾ per cent. We have actually raised from one office alone £300,000 at 4¾ per cent. I should like to know whether there is any other

company in London who can borrow on better terms. I say again, therefore, that we have not only done our duty to our shareholders, but also to the public, in every possible way. And yet, notwithstanding this, we hear these calumnies repeated day by day, and hour by hour, by parties who ought to know better, simply for the sake of—I hardly know what to call it; they seem to have no object but to traduce us, and when they cannot find anything to find fault with in the company, they attack me. There is a person named Newton on the board, who, as I understand, has raised himself (and I honour him for it) from the position of a working man, who is continually making this great mistake, that because he knows but little himself, everybody else knows nothing at all. Like many men of his class, he is cursed (for it is a curse) with the "gift of the gab," and he fancies that loud talk will stand for sound argument, and he mistakes impudence for independence. George Stephenson was one of the finest specimens of the class from which Mr. Newton has risen; he knew himself, and because he did so, he respected others; and instead of wasting his energies in talking bombast and nonsense, he made himself master of everything with which he had to do. Now, what does this Mr. Newton say about me? He states that I, as governor of this company, induced the directors to pay a most extravagant price for land which they bought of the Ironmongers Company, of which company I was an officer. Mr. Leslie, the tailor in Conduit Street, first of all made the statement, and I then treated it with contempt, having not the slightest idea of answering him. I did not suppose that any one who knew me would believe what he stated; in fact, the folly of the statement was its own best refutation. Why, if I had any interest at all, it was, not that the Chartered Company should pay the highest price for the land, but that in the interest of that company, the Ironmongers Company should get the lowest price. I had a direct pecuniary interest in the Chartered Company paying the least, I had none at all in the Ironmongers Company obtaining the highest price for the land. Unfortunately the stupidity of people making such charges is only equalled by their impudence. Mr. Newton chose to repeat this statement at the board, and I wrote to him and told him what I now tell you. I told him also, in addition, that in reference to the transaction in question, I was so anxious that no one should have the slightest chance of saying that I biassed this company, that I never interfered with the matter in any way as to fixing the price of the land, nor in the appointment of the parties who valued it. From beginning to the end I never interfered, except to write to the two gentlemen who had been appointed, and who were not connected with the company, but were accepted by us—Mr. Henry Pownall, and Mr. Hunt, of Parliament Street. These gentlemen stand very high in their profession, and when the Ironmongers Company appointed them, the Chartered Company were so satisfied that they at once accepted them, and, as I say, I never had the slightest communication with them, by word of mouth or by letter, from beginning to end, except to inform them that they had been appointed, and to refer them to the Ironmongers Company's surveyor. They went down and valued the land, and the sum fixed upon by one being higher than that of the other, they split the difference, and this company paid the amount so settled between them. I wrote and told Mr. Newton this; and what does he do? He merely stated to the board that "so far as he was concerned, he personally was satisfied with my explanation." Good God! As if I cared one pin what *he* thought. But he had made a public statement which in itself was a deliberate falsehood. I gave him an explanation, and I called upon him to read it to the board. Of course I had no right to expect the fine feelings of a gentleman in Mr. Newton, but I did expect the manliness and honesty of an Englishman. He was at least bound to express his regret that he had been misled into the utterance of a scurrilous libel against me. Instead of that, he contents himself by saying that, so far as he is personally concerned, he is satisfied with my explanation. Now, gentlemen, you will hardly believe it, but it is a very curious fact that though they talk of the extravagant price given by this company to the Ironmongers Company, the Metropolitan Board of Works themselves, several years previously, also bought land from that company. The valuation of it was referred to Mr. Shaw, of Christ's Hospital, one of the first men in his profession in London; and looking over the valuation the other day, I found that the Metropolitan Board, who are so very careful of their money, actually paid that company at the rate of £440 per acre for the land, ours averaging £330. And, mind, all the land the board bought was back land, while the land which this company bought was land lying between that and the river, having an extensive frontage to the Thames, and I should say worth three times as much. I think, therefore, it is about the most cool piece of insolence a member of the board could be guilty of, to charge me that, being connected with this company, I induced them to give a larger price to the Ironmongers Company than they should have done, the board themselves having given to the same company a much higher price for land which was not nearly so good. Gentlemen, I am very sorry to detain you with this personal explanation, but as statements of the kind I have referred to have gone forth to the public, I felt that you were entitled to call upon me for some reply thereto. It was a matter with which neither Mr. Newton nor the public had anything to do, and the statement was simply made to annoy me; but I say, as a friend said to me some time ago, "I do not mean to die in debt." I recommend any man who attacks me to confine himself to the truth. If he can find anything against me, let him state it, and I shall be ready to meet him, and he may depend upon it if he deliberately makes a false statement for the sake of injuring me, I shall not refrain from answering him. I am glad to see the gentlemen of the Press here to-day, and I hope they will put down every word I say, as I should be sorry for any man to suppose I would say behind his back what I should shrink from saying before his face. I remember one answer to Junius, who was always libelling some one, was "Cease, viper; you bite a file." I should be sorry to call names, but I beg Mr. Newton, before he attempts to bite an old file like me, to cease from bombast and fustian, and to see that he has a new set of adamantine teeth of stern facts. He will then have some chance of making an impression upon me.

The DEPUTY-GOVERNOR (the Hon. Howe Browne) seconded the motion.

Mr. DOANE: I should like to elicit from the governor some information respecting the question of amalgamation. And in bringing the matter before the meeting, I will first read a few remarks from a recent number of the JOURNAL OF GAS LIGHTING. The editor says, speaking of the London companies,

> Can there be any insuperable obstacles to the union of the companies of their own mere motion? If there be, we fail to perceive them. We are very well aware of the obstacles which do lie in the way of amalgamation, but any one who will candidly consider the matter, and take into account the vast public and private advantages which must result from a consolidation of interests, will, we believe, agree with us, that amalgamation is the best policy under present circumstances. This is no new doctrine in our columns. It was urged upon the companies when affairs had not the threatening aspect they wear to-day; and now, while we have not the smallest fear of any disastrous result from the present agitation, we would still, in the interest of companies and consumers alike, counsel amalgamation. We know that there are small jealousies at work, which stand in the way of union; but we are perfectly certain, that if the shareholders of the companies were polled, their almost unanimous voice would be in favour of amalgamation. The companies have a common object—the supply of gas at the lowest possible price; a common interest—the maintenance of statutory profits. The first end can be best secured by unity of management; and as regards the second, it need only be said that "unity is strength."

Now, I have no doubt, from the antecedents of this company, that overtures to this effect may have been made to other companies, but the public do not know that such is the case, and I think it is desirable that some statement should be made on the subject. This question of amalgamation was brought prominently forward in a letter from the Board of Trade last autumn. Mr. Farrer's letter was unquestionably sanctioned by Sir Charles Adderley, the president; and a suggestion of that kind, coming from this department of the Government, is of great importance, and deserves serious consideration from us. That letter pointed out a blot upon our present system—in an allusion it made to the mains of one large company passing through the district of a small company who were applying to Parliament for powers to lay down new mains of their own, in consequence of the increasing demand for gas in the locality. Of course, if an amalgamation could have taken place, this application would be unnecessary, because they would only have had to tap the main of the larger company to obtain all that they required. There is another subject I would also refer to, and that is the Regulations Bill, now before Parliament. I was sorry to learn that a short time ago, when a deputation, in reference to that bill, had an interview with Mr. Secretary Cross, although the Imperial and some of the south London companies were represented and offered objections to the bill, the Chartered Company were absent. I do not know why it should have been so. About the same time there was a large deputation to the Chancellor of the Exchequer, from the railway companies, on the subject of the passenger tax. Now, the northern and southern railways have not the same interest in that question, because companies having a large goods traffic are not so much affected by the passenger tax as the others, and yet they combined to lay their views of the matter before the Government. But have not the gas companies one interest? and should there not be unity of action with them in opposing this obnoxious bill? One other matter I would refer to: there is a small item in the accounts which I should like to ask an explanation upon. It is in No. 11—"Statement of gas made and sold"—and relates to the total quantity of gas accounted for. I find that as respects common coal gas, the unaccounted-for gas is somewhat less than 10 per cent., whereas in the case of cannel gas it amounts to 14 per cent. It appears to me that 10 per cent. is very creditable to our officers, and I cannot understand why there should be such a difference in reference to the cannel gas. Are there any exceptional circumstances?

The GOVERNOR: No; there is nothing at all exceptional. The mileage of the cannel gas mains is much larger in proportion to the quantity of cannel gas transmitted through them, and, therefore, the per centage of leakage is higher. With respect to your first question—that relating to amalgamation, I can only say, we cannot compel other companies to amalgamate. We have been in negotiation with one or two, but they asked terms which we did not think it right to give. They asked that we should give them a preference dividend, but we thought we could manage without that, and that such an arrangement would not be fair to our present shareholders. As to the Regulations Bill you were asking about, I may say that we are going to oppose it tooth and nail. We do not object to some portions of it, but we do strongly object to the omission of the revision clauses. The bill proposes that the lowest price shall be fixed, and that we shall be required to supply gas at that price, even if coals advance to 40s. a ton.

Mr. DOANE: Do I understand that the directors have made application to neighbouring companies to amalgamate.

The GOVERNOR: We did not make application; they came to us, and we have considered their proposals.

Mr. DOANE: There has been no public announcement of it.

The GOVERNOR: We did not announce anything; we considered the negotiations were private. The other companies might not have liked it to be announced. There is one company we were really anxious to amalgamate, because our mains run through their district.

Mr. GRAY: I have much pleasure in being present on this occasion. My worthy friend, the governor, has entered upon an elaborate explanation of his conduct with reference to the Ironmongers Company, but I am quite sure that, without that explanation, every one who knows him knows that he stands too high in public estimation to suffer from such statements as those he quoted, and that he is altogether incapable of doing any intentional wrong. With reference to the accounts submitted to the meeting I consider them highly satisfactory. It is a matter of deep regret that the immaculate Corporation of the City of London should have entered with the Metropolitan Board into another crusade against this company. I have no hesitation in saying that every transaction in connexion with this company has been marked by uprightness and honesty, but it seems that whatever we do we are sure to receive censure from some one. However, as far as regards the present agitation, which is altogether groundless, I have no fear but that all will come right. As *The Times* very properly put it in 1867, when speaking of the confiscation schemes of the corporation, there is no method of obtaining a commodity so cheaply as to steal it. That is just what the City of London proposed at that time in reference to the gas supply, and the position of things seems very much the same at the present moment. It is a very hard case that people who have invested their money upon the faith of Acts of Parliament, should be subject to these continued agitations, which only tend to injure their property; but I hope the present, as many past attempts, will prove abortive. As far as this company are concerned, I sincerely believe that while my worthy friend presides over us, associated as he is with so many able colleagues, we shall go on prosperously whatever outside agitators may say or do.

The GOVERNOR: There is one matter I omitted to mention, A metropolitan journal, discussing our report, says: "We think the directors would have done better to have omitted altogether the paragraph in regard to the loss sustained by the sale of coke. The larger they make it to be as an actual fact, the greater disgrace we think it is to their management." This is a journal which professes to tell us our duty; but I should like to know, if we had followed the course they point out, what they would have said about cooking accounts. We always have prided ourselves on the fact that our shareholders knew everything connected with the company. We have nothing to conceal, and we certainly should have done wrong morally if we had sought to hide any facts from you. The truth is, we cannot find customers for our coke. We have employed agents, and done everything we could to get customers, but have not succeeded; and it is just the same with other companies. With respect to the land of the Ironmongers Company, it was not only the Metropolitan Board who gave a higher price than we did, but another company, who bought land from them, not on the Thames, but on the Lea. They took 150 acres, and paid £90,000 for it, we having paid £50,000 for the same quantity; so that, I think, in every way we did well.

A SHAREHOLDER: There is an item in the balance-sheet of "Temporary loan, £90,000." There is also in the net revenue account an item of "Dividend, £90,000." I do not know whether the one explains the other.

The GOVERNOR: No, not all. The truth is we have literally not working capital enough, and are constantly going to our bankers. But these items have no connexion. The £90,000 of temporary loan is now all paid off, and we have £70,000 on deposit.

Mr. BURLS: I trust that the Metropolitan Board will have grace and wisdom enough to "read, mark, learn, and inwardly digest" the report which the directors have laid before us to-day. There is only one thing that I desire to make a remark upon, not that I have any doubt in my own mind on the subject, but *The Times* newspaper has given a sort of immortality to a statement that the directors of this company have sold the site of the works at Blackfriars for a sum of £170,000, and that this land, if it had been sold in another manner, would have fetched a great deal more money. I think the shareholders would like to know from the governor whether the directors are satisfied that the means taken for the disposal of that land were the best for obtaining its true value.

The GOVERNOR: I may say at once that we meet here to-day for the purpose of eliciting and giving information. We desire that every shareholder should ask what questions he thinks fit upon every matter respecting which he desires information. If I cannot answer your questions, why, remove me from my seat. We are delighted to give the fullest information in our power

upon every matter of interest to you. As to the point alluded to by the last speaker, I am reminded of a remark of Bulwer Lytton to the effect that those who know least about a thing, seem to understand it best. If we had sold this land for £500,000, some one would immediately have said we ought to have got £1,000,000. In estimating its value, we consulted, amongst others, the Messrs. Vigers, who stand as high as any valuers in the City of London, and these gentlemen advised us that if we obtained £150,000 we would do well. The directors, however, thought they could get more, and they stood out for a long time. They wrote to several persons whom they hoped would buy, but they failed to get an offer. They then negotiated with the corporation, who offered £170,000. It should be known that one-half of the land was leasehold property, held by the company from the corporation, upon which they were bound, at the end of the lease, to leave buildings worth £600 a year. By this sale we get out of that liability. We still retain a slice of the land upon which to erect a valve-room, &c., and we received, in addition to the £170,000, a sum of £10,000 as damages for our trade purposes, so that we get altogether £180,000, and take away all the plant and every brick upon the land. And you must recollect that £170,000 represents £17,000 a year, because this was our old capital upon which we were paying 10 per cent., so that every month there was a positive loss of £1500. If we had retained the land another six months, it would have cost us £9000 in loss of interest, so that it was important for us to get rid of it as quickly as possible. You see we have to take all points into consideration, and we are quite satisfied that, in this matter, we have attended to your interests, and have taken the best means to secure the full value of the property. We were told, during the negotiations, that there was one man who was a speculative buyer of City land, who would give us 2s. 6d. a foot. We applied to him, but he laughed at us. No doubt the land is worth more to the corporation than to any one else, for they can make arrangements with the Metropolitan Board in reference to the embankment, which we could not have done. And then, remember the onerous covenant we were under, to leave buildings upon the leasehold portion, of the value of £600 a year, and which we have escaped from—that was worth £15,000.

A SHAREHOLDER: There is one other point I should like to notice, and on which I would ask the governor for explanation, and that is in reference to the failure, on Standing Orders, of the bill intreduced by this company. Of course the proceedings in regard to it were attended with some expense; and I should like to know how much. As to the general supply of gas in London, I believe there is now very little ground for complaint; but there is one thing about it which gives rise to constant remark, and is attended with considerable risk and danger to the public, and that is the unequal pressure at one time and another. Whether this can be prevented or not I cannot tell, but it is a point which should be seriously considered in the management of gas-works. I am perfectly certain that if anything can be done in the matter our directors will give it their best attention.

The GOVERNOR: As to the first point, I really cannot tell exactly the cost of the bill promoted by the company. I can only say, with reference to its failure, that the notices were not sufficiently full to meet the case. It is a most extraordinary thing that the Metropolitan Board objected to that bill, because it contained clauses authorizing them to take our property. They did not like that; they wanted to get possession of the works upon their own terms, and finding that they could not do so, they got the bill discharged on Standing Orders, though we were quite ready to go on with it. The expense to us, I suppose, will not be more than £500 or £600. As to the question of pressure, it cannot be regulated all over the district in a moment. When the shops shut up there will be for a short time a variation in the pressure, and the consumers must regulate their own supply to some extent by cocks and governors.

The motion for the adoption of the report was then put and carried.

The GOVERNOR brought up a minute of the Court of Directors recommending the dividends, and moved the following resolution:—"That a dividend as follows for the half year ending on the 31st of December last be now declared—viz., on the ordinary A shares at the rate of 10 per cent. per annum, subject to deduction of income-tax, and of a rateable proportion of £5024 17s. 11d., which, in accordance with the opinion of the Law Officers of the Crown, ought to have been carried to the insurance-fund out of the profits of the year 1873; on the 5 per cent. preference shares (first, second, and third issues) at the rate of 5 per cent. per annum; on the B shares at the rate of 4 per cent. per annum; on the C and D shares at the rate of 10 per cent. per annum, subject to deduction of income-tax."

The DEPUTY-GOVERNOR seconded the motion, which was put and carried.

Mr. YOOL proposed the re-election of the retiring directors, Messrs. Bennoch, Deffell, Evans, Eykyn, and Giffard.

Mr. FRANKLYN seconded the motion, which was put and carried.

The retiring auditors were also re-elected.

Mr. FRANKLYN asked what had been the result of the offer made to the shareholders in reference to the balance of new capital at a premium.

The GOVERNOR said it had all been taken up by them, and they would have taken five times as much.

On the motion of Mr. STOKES, a cordial vote of thanks was given to the governor, deputy-governor, and court of directors, for their successful management of the affairs of the company.

The GOVERNOR, in acknowledging the vote, said: Gentlemen, on behalf of my brother directors and myself, I beg to return you our most cordial thanks for the honour you have done us. We shall continue to use our best endeavours for the interests of the company, and hope to be as successful in the future as we have been hitherto.

THE BISHOP OF MANCHESTER ON THE PROPOSED CORPORATION NEW GAS-WORKS.—At a meeting of residents in the neighbourhood of Philips Park, on the 30th ult., for the purpose of taking steps to prevent the erection of gas-works in that locality, a letter was read from the Bishop of Manchester, who had been asked to aid the movement, in which his lordship says:

I do not know what help I, as an outsider, and ignorant of the facts, can render to your cause. Gas-works must exist somewhere; and in a thickly-peopled neighbourhood, such as that which exists in Manchester, I fear they could hardly be placed anywhere without being in some sense a nuisance to somebody. I can quite share the feelings of any one who tries to do what in my own case I should try to do myself—to keep a nuisance, whether small or great, as far as he can from his own doors. At the same time, I believe there are gas-works in the very heart of Manchester and Salford, with a large population dwelling around them who do not seem, so far as I am aware, to be deleteriously affected by them. I think you have only to make out a good case, to state it strongly, but in temperate, unexaggerated language, and I believe the Gas Committee will give you a fair and full hearing. But you would have to show where a site could be obtained for the said works which would be free from the disadvantages which attach to the proposed site near Philips Park. If the gas-works require to be extended, they must, as I have already said, be placed somewhere.

The meeting passed the following resolutions:—

That the gas-works near Philips Park will make the park worthless, and pauperize and lower the morals of the people in the neighbourhood, and be the means of driving away the present inhabitants, and bringing in their places people of the lower class, such as is the case near the gas-works in Gould Street, Rochdale Road. And as it is said that the extension of the gas-works is required in order to meet the demand of the consumers of the outlying districts, the erection of new works near Philips Park would be an injustice to the people of that district. This meeting therefore pledges itself to use every exertion to oppose the scheme.

That the gas-works ought to be taken out of the city altogether by adopting Barton Moss, offered by Sir Humphrey de Trafford, or some other favourable site obtained.

That the resolutions passed at this meeting be handed to councillors Bennett and Bright, and that they be requested to present them to the City Council at their next meeting.

OTTOMAN GAS COMPANY, LIMITED.

The Ordinary Meeting of Shareholders was held at the Company's Office, 85, Cheapside, London, on Thursday, April 1—S. A. BECK, Esq., in the chair.

The SECRETARY (Mr. Arthur J. King) read the advertisement convening the meeting, and the minutes of the last meeting. The register of shareholders having been sealed, the following report and accounts were presented:—

The directors herewith present the audited statement of accounts for the year ending Dec. 31, 1874.

The gas-rental for that period amounts to £8573, against £7355, and the net profit to £1993, against £1187, for the previous year.

The debentures, which stood in the last account at £11,200, have now been reduced to £5500, none of which mature during the current year, so that no call will be necessary on the preference shares till next year.

The amount now standing at the credit of profit and loss account is £2596 7s. 4d., which the directors propose to deal with as follows:—

A dividend of 7 per cent. on the preference shares	£319	15	9
A dividend of 3 per cent. on the ordinary shares	1500	0	0
To write off from the preliminary expenses account	500	0	0
Leaving a balance to carry forward of	276	11	7
	£2596	7	4

And resolutions will be proposed at the general meeting accordingly.

The directors retiring by rotation are Henry Deffell, Esq., and Dr. Fraser, who, being eligible, offer themselves for re-election. The auditors, E. P. Rowsell, Esq., and George Allin, Esq., also offer themselves for re-election.

Balance-Sheet, Dec. 31, 1874.

Dr.				*Cr.*			
Capital	£50,000	0	0	Plant	£42,832	2	0
Do., preference shares, viz.—				Concession and preliminary expenses	14,500	0	0
815 shares, £5 paid	4,075	0	0	Amount owing for public lights	2,270	12	5
1210 shares, £2 paid	2,420	0	0	Sundry debtors	4,166	12	1
Debentures	5,500	0	0	Stocks	4,335	2	10
Sundry creditors	3,822	19	11	Office furniture	60	0	0
Profit and loss account—				Cash	249	17	11
Amount brought forward	603	1	6				
Add for 1874	1,993	5	10				
	£68,414	7	3		£68,414	7	3

Profit and Loss Account for the Year ending Dec. 31, 1874.

Dr.				*Cr.*			
Cost of coals	£3,509	19	8	Gas rental	£8,573	9	11
Wages and materials	990	17	0	Products	1,126	0	0
Salaries and office expenses, Smyrna	1,172	2	0	Net profit on chandeliers, fittings, meter-rents, &c.	652	12	4
Bad debts and allowances	539	7	9	Transfer fees	1	12	6
Exchange	358	15	9				
Repairs and renewals	482	15	7				
Debenture interest	617	2	9				
Directors fees	390	0	0				
Rent, salaries, interest, and discount, and office expenses, London	367	4	5				
Income-tax	22	4	0				
Balance (profit)	1,993	5	10				
	£10,353	14	9		£10,353	14	9

The CHAIRMAN, in moving the adoption of the report, said it was a very satisfactory fact that the directors had been able to reduce the preliminary expenses from £15,000 to £14,500 by writing off £500, as recommended in the last report. The plant had been increased from £42,193 to £42,832. That increase had been rendered necessary in consequence of the new quay at Smyrna, where the company had been called upon to put up a number of lights, and also by the expense of laying mains in different parts of the town not previously lighted. The directors hoped that this would prove a profitable investment. The charge for the public lamps was paid pretty regularly now. On the 31st of December last there was only £503 due on this account, which represented about six weeks consumption. The debentures of the company were now reduced to £5500, of which sum £300 only would mature in 1876, £210 in 1877, and £2600 in 1878. No call, therefore, would be made until 1877, unless the directors should find they required money for additional plant.

Mr. HORNER said he had much pleasure in seconding the motion, especially as the accounts appended to the report showed the affairs of the company to be in a better state than they had been. The recommendation of the report to pay 3 per cent. instead of 2 was a manifest indication of improvement in the concern. The directors hoped that the reduced price of coal would tend further to extend the prosperity of the company.

A SHAREHOLDER having expressed his satisfaction with the policy of the directors in writing off so large a sum as £500 from the preliminary expenses account,

Mr. SMITH, as an original shareholder, said he thought it was a matter for great congratulation that the company were able to pay a dividend, particularly when they remembered the bad plight in which the concern at one time was placed. He hoped the directors saw their way clearly to the continuance in the future of a 3 per cent. dividend to the original shareholders.

The CHAIRMAN said the directors would take every care, and use every exertion, to maintain the present dividend; but, he remarked, they could never calculate upon anything with certainty in Turkey.

Mr. SMITH asked for information as to the old outstanding claim against the authorities for the public lighting.

The CHAIRMAN said it was still owing; but as far as the accounts were concerned it had been written off, so that whatever might hereafter be received on that arrear would be all profit. The authorities, in their communications with the company, were always ready to talk about reductions in the price of gas, but never said anything about payment of arrears.

The motion was then put and carried, and the dividends recommended in the report were declared.

The retiring directors and auditors were severally re-elected, and a cordial vote of thanks was given to the chairman and the other members of the board for their continued attention to the affairs of the company.

The CHAIRMAN acknowledged the vote.

Thanks were also given to the secretary.

The CHAIRMAN, in putting the question to the meeting, said Mr. King gave perfect satisfaction to the directors by the way in which he discharged the duties of his office.

The SECRETARY said he was very much obliged to the meeting for the compliment paid to him, and he specially thanked the chairman for the handsome manner in which he had spoken of his services.

The proceedings then terminated.

COMMERCIAL GAS COMPANY.

The Half-Yearly Meeting of the Shareholders of this Company was held at the London Tavern on Friday, the 2nd inst.—THOMAS BRUSHFIELD, Esq., in the chair.

The SECRETARY (Mr. Jaques) having read the advertisement convening the meeting, the following report and accounts were presented:—

The directors report that during the half year ending the 31st of December last a net profit of £26,543 5s. 8d. has been realized, and they recommend that a dividend of 5 per cent. for the half year (less income-tax) be declared.

The directors report that the company's bill now before Parliament has been read a second time in the House of Commons, and it is expected to be referred to a committee of that House at an early period after Easter.

The following directors, Thomas Brushfield, Thomas Lulham, and Griffith Thomas, Esqs., will go out of office, and, being eligible, offer themselves for re-election.

Henry Webb, Esq., auditor, will go out of office, and, being eligible, offers himself for re-election.

No. 1.—STATEMENT OF CAPITAL *on Dec.* 31, 1874.

Act of Parliament relating to the Raising of Capital.	Description of Capital.	Maximum Dividend authorized.	Total paid up.	Total Amount authorized.
Commercial Gas Act, 15 & 16 Vict., c. 155.	Stock.	10 per cent.	£450,000	£450,000

No. 2.—CAPITAL ACCOUNT.

			Description of Capital.	Certified Receipts to June 30, 1874.	Total Receipts to Dec. 31, 1874.
To Expenditure to June 30, 1874.	..	£417,856 16 5	By Stock	£450,000 0 0	£450,000 0 0
Alterations during half year to Dec. 31, 1874—viz.:					
Received for land sold	£2,354 0 0				
Less expenditure—					
New buildings and machinery in extension of works . . .	£82 6 2				
New and additional mains and services	437 5 11				
New and additional meters. .	535 17 6				
	1,055 9 7	1,298 10 5			
Total expenditure		£416,558 6 0			
Balance		33,441 14 0			
		£450,000 0 0			£450,000 0 0

No. 3.—REVENUE ACCOUNT.

To Manufacture of gas—			Sale of gas—		
Coals, including dues, carriage, unloading, and trimming (see Account No. 6)	£50,452 18 5		Common gas, per meter, at 4s. per 1000 cubic feet .	£76,844 8 7	
Salaries of engineers, superintendents, and other officers at works	1,000 0 0		Public lighting and under contracts, common gas. (See Statement No. 8.) .	7,989 7 8	£84,833 16 3
Wages (carbonizing).	7,418 0 0		Residual products—		
Purification, including £396 19s. 2d. for labour . .	1,329 12 8		Coke, less £934 4s. 9d. for labour and cartage . . .	15,347 13 8	
Repairs and maintenance of works and plant, materials, and labour, and enlarging works, less £179 2s. 11d. received for old materials	9,748 13 11		Breeze less £114 for ditto	64 16 2	
		£69,949 5 0	Tar	4,131 4 7	
Distribution of gas—			Ammoniacal liquor	3,272 6 1	
Salaries and wages of officers (including rental clerks)	642 12 4				22,816 0 6
Repairs, maintenance, and renewals of mains and service-pipes, including labour	2,149 18 6		Rents receivable		58 13 1
Repairs and renewals of meters	1,037 14 5		Transfer fees		14 2 6
		3,830 5 3			
Public Lamps—					
Lighting and repairing		1,360 19 2			
Rents, rates, and taxes		1,845 1 4			
Management—					
Directors allowance	750 0 0				
Company's auditors	75 0 0				
Salaries of secretary, accountant, and clerks . . .	705 0 0				
Collectors commission	586 0 8				
Stationery and printing	337 15 3				
General charges	474 1 0				
		2,927 16 11			
Bad debts		537 6 5			
Law charges		393 10 0			
Interest		335 2 7			
Total expenditure		£81,179 6 8			
To Balance carried to net revenue account, No. 4		26,543 5 8			
		£107,722 12			£107,722 12 4

No. 4.—PROFIT AND LOSS (NET REVENUE ACCOUNT).

To Balance applicable to dividend on stock.	£26,543 5 8	By Balance from last account, June 30, 1874	£8,647 3 0
		Amount taken from reserve-fund	13,852 17 0
			£22,500 0 0
		Less dividend on ordinary capital for the half year ending June 30, 1874	22,500 0 0
		Amount from revenue account, No. 3	26,543 5 8
	£26,543 5 8		£26,543 5 8

No. 5.—RESERVE-FUND.

To Amount carried to profit and loss account—half year ending June 30, 1874	£13,852 17 0	By Balance on June 30, 1874	£28,221 0 3
Balance on Dec. 31, 1874.	14,808 10 11	Interest on amount invested	440 7 8
	£28,661 7 11		£28,661 7 11

No. 6.—STATEMENT OF COALS.

Description of Coal.	In Store, June 30, 1874.	Received during the Half Year.	Carbonized during the Half Year.	In Store, Dec. 31, 1874.
	Tons.	Tons.	Tons.	Tons.
Common	9,748	40,693·5	46,441·5	4,000
Cannel	870	2,155·14	1,945·14	1,080
	10,618	42,848·19	48,386·19	5,080

No. 7.—STATEMENT OF RESIDUAL PRODUCTS.

	In Store, June 30, 1874.	Made during the Half Year. Estimated.	Used during the Half Year. Estimated.	Sold during the Half Year.	In Store, Dec. 31, 1874.
Coke . . . . . Chaldrons of 36 bushels	3,035	44,000·9	11,057	35,378·9	1,500
Breeze. . . . . do. 36 do.	347	5,075	..	4,522	900
Tar. . . . . Gallons .	1,532	461,380	..	446,912	16,000
Ammoniacal liquor—butts of 108 gallons . .	24	8,723	..	7,821	926

No. 8.—STATEMENT OF GAS MADE, SOLD, &c.

Description of Gas.	Quantity Made. Estimated.	Quantity Sold.			Quantity used on Works, &c.	Total Quantity accounted for.	Quantity not accounted for.	Number of Public Lamps.
		Public Lights and under Contracts. Estimated.	Private Lights (per Meter).	Total Quantity sold.				
	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	
Common	476,086	47,265	375,498	422,763	4,000	426,763	49,323	3,796

BALANCE-SHEET.

To Capital—				By Cash at bankers	£15,572 11 11	
For balance, per account No. 2	£33,441 14 0			Ditto in secretary's hands for current expenditure	700 0 0	
Net revenue—						£16,272 11 11
For balance, per account No. 4	26,543 5 8			Amount invested in Three per Cent. Consols		14,808 10 11
Reserve-fund—				Stores on hand, viz.:—		
For balance, per account No. 5	14,808 10 11			Coals	5,261 14 2	
Unclaimed dividends	1,089 10 2			Coke and breeze	750 0 0	
Sundry tradesmen and others for amount due for coals, stores, and sundries	23,192 11 7			Tar and ammoniacal liquor	566 13 4	
Deposits	8,388 16 7			Sundry stores	3,652 2 10	
						10,230 10 4
				Accounts due to the company—		
				Gas and meter rental, quarter ending Dec. 31, 1874	52,707 4 11	
				Ditto, arrears outstanding	683 5 6	
						53,390 10 5
				For coke and other residual products		7,899 1 4
				Sundries		4,863 4 0
	£107,464 8 11					£107,464 8 11

The CHAIRMAN, in moving the adoption of the report, said: On the present occasion I think I have less to say than usual. You have heard the minutes read of what took place at our last meeting and at the special meeting, and, therefore, we are in just that position which commends silence more than anything else on these occasions. I can only say, as far as we are concerned, the Commercial Gas Company never was in a better condition than it is at the present moment. I do not want to say one word about what is taking place with other companies, because we must bind ourselves to our own business, and you will take my assurance that nothing could be going on more satisfactorily than the business of our own company. We, the directors, are doing that which we have done for 30 years—we are not only attending to your interests, but to the interests of the consumers; and I believe, if it were possible to canvas the whole of the consumers in our district, you would scarcely find an exception to the satisfaction existing there at the manner in which they are served by us. I beg to move that the report and accounts be received and entered on the minutes.

Mr. RHODES seconded the resolution, which was unanimously agreed to.

On the motion of the CHAIRMAN, seconded by Mr. RHODES, it was resolved to declare a dividend of 5 per cent. for the half year ending Dec. 31 last.

Mr. LIDDELL moved the re-election of the three retiring directors, Mr. Thos. Brushfield, Mr. Thos. Lulham, and Mr. Griffiths Thomas. He said it was not at all desirable to make any change; and, so long as the directors were willing and able to serve them, the company could not do better than re-elect them. He had had the pleasure of knowing Mr. Brushfield for many years, and his conduct in public life was such as must commend itself to every one who had intercourse with him. From the interest he felt in this company, he was quite sure that his best energies would be devoted to promoting its welfare.

The resolution was seconded and agreed to.

The CHAIRMAN said he felt he was now only the fragment of a man, but he had used his best energies in their service. He did not expect he should again be elected, but while he lived he would do his very best in order to discharge his duties to the satisfaction of his own conscience.

Mr. LULHAM and Mr. THOMAS having also acknowledged their re-election, Mr. Henry Webb was re-elected an auditor of the company.

In reply to a suggestion in future to pay the dividend free of income-tax, the CHAIRMAN said it could not be done; the only way was to get rid of the tax altogether.

A vote of thanks having been passed to the chairman, directors, and officers of the company, the proceedings terminated.

ALLIANCE AND DUBLIN CONSUMERS GAS COMPANY.

The Half-Yearly Meeting of Shareholders was held on the 31st ult.—EDWARD FOTTRELL, Esq., in the chair.

The SECRETARY (Mr. W. F. Cotton) having read the notice of meeting, the following report and statements of account were presented:—

In presenting the report and balance-sheet for the half year ending Dec. 31, 1874, it is our pleasing duty to place before you what we conceive to be a satisfactory statement, particularly having regard to the crisis of a most embarrassing nature through which the company have passed.

The total income for the half year, duly certified by your auditors, amounts to £119,723 0s. 6d.; the expenditure for the same period, including bond interest, being £99,934 12s. 4d.; leaving a balance of profits amounting to £19,788 8s. 2d. To the disposal of this balance your directors have given their most earnest consideration, and bearing in mind that it is two years since the shareholders received any remuneration on the capital invested, the board determined to recommend payment of a dividend at the rate of 6 per cent. per annum, free of income-tax. This will absorb a sum of £17,700, leaving an unappropriated balance of £2088 8s. 2d., which your directors recommend to be applied as follows—viz., £1000 in part payment of the loss sustained on the working of the half years ended December, 1873, and June, 1874. The remaining £1088 8s. 2d. to be carried to the credit of the contingent account, the total of which will then be increased to £4101 11s. 10d.

An examination of the accounts will show an efficiency of working, and a progressive economy in management, which your directors feel the proprietors will regard as satisfactory, especially when the magnitude of the task undertaken, and the almost insurmountable difficulties with which the company have been surrounded of late, are borne in mind. These circumstances taken in connexion with the heavy expenditure incurred in reconstructions which it became necessary to provide for out of revenue, together with the great depreciation in the value of coke, render the results the more gratifying. The reconstructions, which were chiefly effected in the carbonizing departments, have been found efficacious; and notwithstanding they were incomplete, during the period referred to, they, in a great measure, operated in producing the present favourable financial results. These works, which are still unfinished, your directors are making strenuous efforts to complete.

Every exertion is being made to place the distributing apparatus in good order. Five sets of workmen are actively employed under the superintendence of the company's officers, in testing and repairing the mains and services; and although these operations of necessity cause great waste, a considerable diminution in the leakage or quantity of gas unaccounted for has already been effected.

Your directors have to report, that (with few exceptions arising from local defects, from the mains being insufficient in capacity to meet increased demands), the supply of gas during the winter has been ample, but they regret to say that contrary to their expectations a number of consumers, while admitting that the supply was much more abundant than heretofore, have objected to the increase in their accounts. These consumers, without giving the matter due consideration, are disappointed to find there is any increase in their bills over the corresponding quarter of last year, overlooking the fact that the raw material, combined with the enchanced price of labour, is more than 40 per cent. in excess of what it was a few years since, and that notwithstanding the reductions which have taken place in the coal market during the past 12 months, coals suitable for our purposes command at the pit's mouth nearly double the price they did previous to the year 1872. Your directors are conscious of having done their customers justice. They have faithfully fulfilled the statutory obligations of the company, but they wish it to be distinctly understood that the company's responsibility ceases at the meter, the control of the consumption being altogether in the hands of the consumers. They have no reason to shrink from, but, on the contrary, to court the fullest investigation of the consumers accounts, neither have they any objection to consumers providing meters of their own should they feel dissatisfied with those of the company.

The directors have further to report that, their engineers having impressed upon them the absolute necessity of immediately providing additional condensers and purifiers at the Dublin works, in consequence of the apparatus at present in operation being inadequate to meet the increased demand for gas, they caused plans and specifications to be prepared for a set of condensers, and having accepted one of the tenders for which they advertised, they hope to have them erected by August next. They have also to add that, in consequence of an increasing demand for gas at Kingstown and Bray, they will require during the ensuing summer to erect additional storeage plant at both stations, and to increase the retort capacity in Kingstown.

Since your directors last addressed you, they have been so fortunate as to procure a valuable acquisition to the works on Sir John Rogerson's Quay, by the purchase on favourable terms of the yard and premises adjoining, formerly held by the late Mr. Charles Connolly. For some years the storeage room at this station was most deficient, the greatest difficulty being experienced when it was necessary to store coke; this not only involved considerable expense for stacking it, but also depreciated its value to a great extent, large quantities being broken into breeze in the operation.

In conclusion, the directors consider it but a simple act of justice to their chief officers to state that they have rendered valuable service in bringing about the gratifying results which are submitted to you on this occasion.

The directors who go out of office by rotation on the 31st inst. are David Drummond and Maurice Brooks, Esqrs, but being eligible for re-election they offer themselves accordingly. One of the auditors, Francis Asken, Esq., whose tenure of office expires on that day, offers himself for re-election.

Capital Account, for the Half Year ended Dec. 31, 1874.

		Total to Dec. 31, 1874.
1. Expenditure to June 30, 1874		£667,179 17 10
2. Expended this half year on additional work at stations	£632 17 6	
3. New mains and services	1,248 16 6	..
4. New meters, fittings, &c.	952 11 10	..
5. Parliamentary expenses	13 4 4	..
6. Purchase of premises, Sir John's quay, late C. Connolly	2,150 0 0	..
		4,997 10 2
		£672,177 8 0
Less amount received from Royal Insurance Company for loss sustained on building, &c., by late fire	..	971 6 6
		£671,206 1 6
Balance of capital account	..	65,396 8 6
		£736,602 10 0

	Certified Receipts to June 30, 1874.	Received during Half Year.	Total Receipts to Dec. 31, 1874.
1. Class A shares, £10	£189,970 0 0	£30 0 0	£190,000 0 0
2. ,, B ,, 10	99,159 0 0	620 0 0	99,779 0 0
3. ,, C, No. 1 . 10	135,000 0 0	..	135,000 0 0
4. ,, C, ,, 2 . 10	163,187 0 0	1,136 10 0	164,323 10 0
	£587,316 0 0	£1,786 10 0	£589,102 10 0
5. Bonds	..	..	147,500 0 0
			£736,602 10 0

Revenue Account, for the Half Year ended Dec. 31, 1874.

Manufacture of gas—				Sale of gas—		
1. Coals, including dues, carriage, unloading, and all expenses of depositing same on works	£66,844 10 6			1. Gas (340,125,100 cubic feet), at 5s. 4d. per 1000 cubic feet		£90,700 0 6
2. Purifying materials, oil, water, and sundries at works	620 7 8			2. Public lighting, & under contracts		5,675 17 0
3. Salaries of engineers, including chief engineer, superintendents, and officers at works	1,057 3 2			3. Rental of meters		2,617 14 4
4. Wages at works	7,669 12 0			Residual products—		
5. Ditto, additional during time of late fire	374 3 8			4. Coke, &c., less labour and cartage		14,979 1 2
6. Repairs and maintenance of works and plant (including renewal of retorts), machines, apparatus, tools, materials, labour	8,793 11 1			5. Breeze		1,311 5 5
	£85,359 8 1			6. Tar		2,444 17 1
Less old material sold	988 15 0			7. Ammoniacal liquor		1,754 11 9
	£84,370 13 1			8. Rents		166 15 9
Distribution of gas—				9. Transfer fees		28 7 6
7. Salaries of surveyor, chief inspector, inspectors, assistant inspectors, and clerks in light office	930 2 8			10. Dispatch money received		44 10 0
8. Repair, maintenance and renewal of mains and of service-pipes, including materials, laying and paving, and labour	2,071 19 7					
9. Repairing, renewing, and refixing meters	1,517 7 2					
Public lamps—						
10. Lighting and repairing	825 0 2					
Rents, rates, & taxes—						
11. Rents	727 7 4					
12. Rates and taxes	1,787 11 2					
Management—						
13. Directors allowances	350 0 0					
14. Salaries of secretary, accountant, clerks, &c.	722 3 0					
15. Collectors commission	840 11 2					
16. Stationery and printing	249 2 5					
17. General establishment charges and incidentals	579 2 7					
18. Company's auditors	15 0 0					
19. Law charges	235 5 7					
20. Bad debts	591 18 11					
21. Abatements and allowances, &c.	188 14 8					
22. Annuity account	543 9 6					
Total expenditure	£96,545 9 0					
Balance carried to profit and loss account	23,177 11 6					
	£119,723 0 6					£119,723 0 6

The CHAIRMAN, in moving the adoption of the report and statement of accounts, said he thought the shareholders might congratulate themselves on the resuscitation of the company. They had had to tide over very hard times, and were it not for the Act of last session, which enabled them to reduce the illuminating power of gas from the 20 to 16 candles, they could not have gone on. Referring to the statement of accounts, he would first call their attention to the share capital. It would be seen that that had been altered by a sum of £50,000—the amount of capital they had permission to issue by the Act of last session, but he hoped it would be long before it became necessary to make that issue. The next was the loan account, representing £12,500—the amount applicable to share capital whenever such capital would be issued. In the capital account alone the expenditure up to the 30th of June last year was £667,179, and they had expended this half year a sum of £4497 10s. 2d., less £971 6s. 6d. received from the insurance company. Of this amount a sum of £2150 had been devoted to acquiring new and valuable premises next to their own, and belonging to the late Charles Connolly, so that it would reduce the actual amount expended on capital in the last year to a very small sum. The revenue account he believed showed the largest receipts they ever had—viz., £119,723. Looking at the debit side of the account, which dealt with the cost of coals, wages, &c., he thought it would bear favourable comparison with similar items in the accounts of any other gas company in the United Kingdom. Comparing the price of coals in the last half year that they were manufacturing 16-candle gas—viz., 1871—with the half year just terminated, it would be seen that there was an increase of upwards of 13s. per ton. To recoup themselves for the advance in the price of coal, of wages, and other expenses, the directors had to advance the price of gas by 10d. per 1000 cubic feet. Any person accustomed to figures would at once perceive that this would not compensate the company for the great loss in the price of coal, but they took the greatest care with their retort-houses, their distributing apparatus, and all the necessary charges connected with the concern, and by this economy and attention they had not only been enabled to make ends meet, but to turn the corner and pay the shareholders a dividend. He thought that it was a satisfactory state of things to find that the total on the credit side of the profit and loss account was £23,177 11s. 6d., from which they might deduct £19,788 8s. 2d., the amount of the profit for the past half year. How it was intended to use that money the shareholders had been told in the report. It was first proposed to pay a dividend at the rate of 6 per cent. per annum, and then to apply £1000 towards the losses of the previous two half years, the remaining £1088 would be carried to the contingent-fund. Such an appropriation of the amount would, he thought, give satisfaction to all the shareholders. The shareholders having been so long out of a dividend, and £9732 being left over as a balance to the debit of profit and loss, the best course was having paid a dividend to the shareholders to wipe off the losses of the two half years by degrees. The £1000 which it was intended to add to the contingent account would make that fund up to £4000. Unfortunately, they had very great contingencies to meet at present, such as the falling in of the roof of the retort-house, but he was happy to say the new one was now very nearly completed. In future he thought that by a little deduction from profit and loss they would be enabled to meet all contingencies to which this fund was applicable, without in any way interfering with the dividend. The amount debited for repairs and maintenance of works and plant, which came to £8793 11s. 1d., might be considered large, but he was glad it was so, for it had been applied in reinstating old by new mains, retorts, &c, and doing the necessary work of the half year out of half year profits. There was one item in the report relating to the expense of having to provide new works for Bray and Kingstown, where the demand for gas was increasing. Lest any of the shareholders might feel alarmed, and think that to carry out these improvements an issue of new capital would be necessary, he would inform them that such was not the case. The company had some surplus stock at their works in Dublin, which they would be able to manage at a very small expense to transfer to the suburban works, where they could be utilized. The leakage, or unaccounted for gas, was always an item of great consideration for the company. He was happy to say that they had now brought it to a shade under 20 per cent.—a fact which he thought any person conversant with gas companies would designate as pretty good. Their customers had increased by 400, which was proof that the public were anxious to get gas. With reference to the fire which took place amongst the coals at the works, owing to spontaneous combustion, he might remark that the directors had not charged the depreciation of the value of the coals in the accounts, because the damaged coal had been mostly worked up. The consequence was that though, had not the coal been damaged, the shareholders would have had a larger return from it, yet by working it up, as had been done, the directors made the return appear far worse than if they took credit for the depreciation. To obviate the possibility of such an accident occurring again, they had given up the use of Welsh coal altogether, and they were dividing their large coal store into three or four compartments by building separation walls with air apertures between them, so that in the event of a fire occurring it would be confined to one compartment, and by a quick means of transit the coals could be removed. In fact, he believed they would bring the storeage of their coal to such a state of perfection that the insurance companies would again undertake to insure that article at their works. Complaints had been made outside, but he really felt they were ungenerous, for undoubtedly the company had done justice to the community. By the Act of Parliament they were bound to supply 16-candle gas, and he found that the average had been 16-83. They had continued the pressure required by Act of Parliament, and he believed their customers had not much reason to complain. Although the directors report was written for the proprietors, there were matters in it which might interest, to some extent, the consumers into whose hands it fell. It contained a statement to the effect that the company's responsibility ceased at the meter, the control of the consumption being altogether in the hands of the consumers. The shareholders might say they had nothing to do with that; let them manufacture the gas, and supply it as it was demanded. Although, strictly speaking, their responsibility ceased at the meter, the directors took the greatest care and trouble to find out any deficiency when a complaint was made. But some of the consumers complained unfairly. They forgot, in comparing the cost of their gas in the previous half year with this, that they were not using a fair comparison, for if the company did not get an advance in the price by reducing the illuminating power from 20 to 16-candle gas, the company could not have succeeded. The consequence was that the consumer must use more 16-candle gas to get the same light as from the 20-candle gas, and therefore his account was increased to that extent; but he believed analyses would show that the increase only equalled the difference of 10d. in the 1000 feet. The chairman then alleged that some newspapers had passed unfair criticisms on the company, and he attributed their error, he would not say to ignorance, but to an imperfect knowledge of the circumstances, and insufficient study of the subject with which they dealt. Everything that could be fairly done by them as a prospering company had been done. In conclusion, he moved the adoption of the report and statement of accounts.

Mr. MACREADY seconded the motion. He thought that although, as the chairman had said, they derived great advantage from the recent Act, reducing the illuminating power of the gas from 20 to 16 candles, they would not be in the position they now occupied were it not for the good management of the concern—the saving in leakage, attention to the retorts, and putting the coke and other residuals into good condition, and getting a market for them. The dividend had been fairly earned, and the shareholders were entitled to it, notwithstanding the grumbling of the consumers, who had no sympathy with them when they were making a loss by supplying them with gas beyond their means to manufacture. On the other hand, he thought the shareholders had reason to be gratified at the great alteration which had taken place in their undertaking as compared with what it was two years previously. With respect to the contingent-fund, he trusted the directors would bear in mind that no dividend had been paid for four half years, and that before that fund was largely increased and made a "rest," the existing shareholders were entitled to consideration, many of them being widows and orphans, whose sole dependence was upon the income derived from the dividends. For the improved condition of the company he thought the officers were entitled to their thanks. No Act of Parliament could have made them more attentive to their duties than they had been previous to the recent enactment.

The report and statement of accounts were unanimously adopted.

The CHAIRMAN next moved that a dividend at the rate of 6 per cent. per annum, free of income-tax, be declared.

Mr. CREAGH seconded the motion, and said the dividend was larger than the shareholders had reason to expect, and they must consider it a very respectable result of their working. Still, they would be pleased if more could be done next half year, but if not, they would look upon it as doing very well to maintain the rate.

The resolution was agreed to.

Messrs. Maurice Brooks, M.P., and David Drummond, were re-elected directors of the company, and Mr. Francis Askins, auditor.

The CHAIRMAN announced that a notice by Mr. Macready of his intention to propose the allocation of a certain sum per annum to form a superannuation-fund for the officers of the company, had been withdrawn.

Mr. MACREADY said he had withdrawn the notice in consequence of finding that the proposed allocation would not be sanctioned by legal authority, but he hoped that some power would be given to public companies to deal with a matter so productive of benefit.

On the motion of the CHAIRMAN, seconded by Alderman TARPEY, it was resolved that the alphabetical classification of the shares of the company should be advertised, and that for the future there should be only one class of £10 shares numbered consecutively.

Mr. Fottrell having vacated the chair, it was taken by Mr. Drummond.

Mr. T. BRUNKER moved a vote of thanks to the directors, whose exertions in the very effective working of the undertaking, and the great difficulties they had overcome, were highly appreciated.

Mr. A. BOWEN seconded the motion, which was unanimously agreed to.

The CHAIRMAN having appropriately acknowledged the vote,

Alderman TARPEY moved a vote of thanks to the secretary and manager, Mr. Wm. F. Cotton. Perhaps, from long association, he was the man best fitted to discharge that duty, but he regretted very much that he was not possessed of eloquence to enable him to accurately picture the claims of Mr. Cotton in their proper light. Let it not be thought that in taking special note of Mr. Cotton's services he was passing over the merits of the engineer and other officers—than whom there were no better in the United Kingdom—but he thought it due to that gentleman that he should be singled out on the present occasion so that, in justice to him, what he had accomplished should be prominently pointed out. For two years the shareholders had been without a dividend, but now a bright prospect opened before them. To whom was this due? Mr. Cotton had filled an easy and comfortable situation under the Municipal Council, where he had £600 a year and the certainty of a retiring pension. He relinquished that office, and became the secretary and manager to this company on a yearly salary of the same amount. He (Alderman Tarpey) was not now asking for an augmentation to Mr. Cotton's salary. Were he to do so, he thought that gentleman might resent it. But he thought, in justice to Mr. Cotton, this fact ought to be known. He would now proceed to show how the dividend had been gained, in order that they might learn what a deep and lasting debt of gratitude they owed Mr. Cotton. At the commencement of the half year in which the company undertook to supply 20-candle gas, the downfall of its prosperity commenced. Coals at that time were £1 5s. 5d. per ton, yet the net working upon the half year was only £9743 12s. 4d., which necessitated the withdrawal from the "Contingent-fund" of £4378 17s. 8d., in order to pay a dividend of 6 per cent. upon capital not so large as it was at present. The relative gains of the "residuals" on that half year were equal to 34 per cent. on the price of coal. In the next half year coals had advanced to £1 7s. 7d. per ton; but, although the company were getting for coke double the price they were now, the "residuals" represented only 27¼ per cent. the price of coal. In that half year the net profits were only £438 19s. 8d.; but this half year—ending the 31st of December, 1874—with coals at £1 7s. 0¼d. per ton, they were £19,788 8s. 2d. How was this accounted for? On the 1st of January, 1874, Mr. Cotton took charge of the works. What was their state then? The "unaccounted-for" gas was 30·30; on the 31st of December it was 19·20, being a saving of 11·10. In other words, on the 31st of December, 1873, each ton of coal carbonized supplied for lighting purposes 5830 cubic feet, whereas on the 31st of December, 1874, it supplied 7700 cubic feet, thus enabling them to sell 1870 feet of gas per ton more than they had heretofore done. This was equal to £24,736 in money value, or £4947 11s. 10d. over the net profit available for the dividend declared. In that one year's working they had the leakage reduced by 11·10 per cent. He wished Mr. Cotton would not permit even the present amount to remain without reduction, but that next half year he would be able to report a still further diminution. In other respects the shareholders had reason to congratulate themselves upon the position of the company. Although they had power to raise it, they did not require any additional capital. All the very expensive works of changing the retorts, from capability to manufacture 20-candle gas to that of 16 candles, had been paid out of revenue, and their dividend had been honestly earned. They were well watched on all sides by the corporation, the Government officer, and the Government auditor, and their position was very gratifying. He begged to move that—"We beg to record our high appreciation of the skill and energy displayed by our secretary and manager, Mr. W. F. Cotton, to whose untiring exertions and matured judgment the present improved condition of the company is largely due."

Mr. M'DERMOTT seconded the resolution.

The CHAIRMAN, in putting the resolution, said that the best way he could show his appreciation of Mr. Cotton, and the confidence he had in his abilities, was by mentioning that, from the day he took the management in his hands, he had commenced his interest in the company; he had now nearly doubled his original number of shares. He knew that if ever they were to have success at all, it would be through Mr. Cotton; and he had not been disappointed. They expected even still greater things from Mr. Cotton, and Mr. Waterfield, their engineer.

The resolution was then put, and adopted.

Mr. COTTON acknowledged the compliment, and a vote of thanks having been given to Messrs. Waterfield and Cotton, jun., the engineers of the company, the proceedings terminated.

CURIOUS QUESTION AS TO GAS DEPOSITS.—At the Liverpool County Court last week, before Mr. Perronet Thompson, judge, the Liverpool Gas Company sued Edward Walsh, of 125, Copperas Hill, for 7s. 1d. for gas supplied. The defence was a denial of liability on the ground that the defendant had purchased a gas deposit which stood to his credit of 30s., from a previous tenant, and it was stated that that tenant had bought the deposit from the person whom he succeeded. The gas deposit receipt had been lost, but the defendant had an acknowledgment that he had paid the money. On behalf of the company it was stated that under no circumstances was a deposit transferable. His honour gave judgment for the plaintiffs, and said that the public must take out deposits in their own names, for the company could not recognize arrangements to which they were not a party.

SHEPPY GAS COMPANY.

The Annual General Meeting of the above Company was held at the large room of the Britannia Inn, Sheerness-on-Sea, on Tuesday, the 23rd ult. About 30 shareholders were present, including several non-residents. JOHN COLE, Esq., the chairman of the board of directors, presided.

The seal of the company having been affixed to the register of shareholders, and the minutes of the last general meeting read and confirmed, the SECRETARY (Mr. A. W. Marks) read the following report:—

The continued high price of coals in the early part of the year 1874, coupled with the disproportionate reduction in the return for coke, materially affected the profitable working of the year. Although coal is now considerably cheaper, the price obtainable for coke continues much lower than its relative value.

The works and plant have been maintained in a state of thorough efficiency. As these are capable of producing nearly twice the gas at present consumed, they are worked economically, and without undue wear and tear. Great economy has been effected during the year, especially in the item of wages.

The rental for the year shows a material increase on that of 1873. The success attending the system of providing fittings on hire, induced the directors to supply gas cooking-stoves on similar terms. The result has been very satisfactory, and it is anticipated that a large number of additional stoves will be sent out before next summer. Part of the increased consumption of the year was caused by the extended use of gas for cooking, and as this increase operates mainly in the season of the smallest make, it is the more advantageous to the company.

The most important additions to works and plant during the year were the erection of an office at the main entrance of the works, so as to afford the manager greater convenience for supervision, and the provision of a duplicate exhauster, which will be permanently fixed this summer.

Two calls of £1 each were made on the 419 B* shares, in June and December last, making, with the previous calls, £5 per share paid up. Should it be found necessary to provide additional working capital, a further call, or calls, may be required to be made in the present year.

The interim dividend on the B shares was paid in November last at the rate of 3 per cent. for the first half of the year. The directors now recommend the declaration of dividends for the second half of the year 1874, after the rate of 2 per cent. on the A shares, and 5 per cent. on the B shares, and paid-up calls of the B* shares, making, with the interim dividends paid, 4 per cent. on the A shares, and 8 per cent. on the B shares for the year. Such dividends to be paid by warrants, in the usual way, on the 1st of May next. To pay these dividends the amount required will be £1021 14s. 9d., which will reduce the reserve-fund account by the sum of £256 8s. 5d., leaving a balance of £1378 5s. 4d. to meet future contingencies.

Messrs. J. Cole, A. Filmer, and G. Filmer are the three directors retiring by rotation, who, being eligible, with the auditor, Mr. E. W. Brightman, will offer themselves for re-election accordingly.

Dr. — *Trade Account for the Year* 1874. — *Cr.*

To Coals carbonized	£4288	1	0	By Gas-rental	£5643	5	1
Purifying	15	9	0	Meter, fittings, & stove hire	209	6	10
Wages on manufacture and distribution	625	16	2	Coke, tar, and liquor produced (less cartage)	1600	8	5
Manager's salary	170	0	0	Coals sold at works	23	11	6
Auditor's salary	15	0	0	Water sold at works	13	18	8
Secretary's commission	225	14	3	Gas-fittings sold	74	0	3
Directors fees	50	0	0	Transfer fees	1	4	6
Rent, rates, taxes, &c.	193	15	10	Rent charges	12	15	0
Stationery, stamps, and incidentals	51	16	5	Rent of garden plots	19	0	10
Repairs, renewals, tools, and stores	114	1	7	Miscellaneous sales	54	5	0
Retort account	100	0	0				
Bad debts	50	0	0				
Deterioration account	150	0	0				
Coals for sale	18	8	0				
Gas-fittings&labour thereon	45	12	2				
Repair of river wall	10	0	7				
Repair of roads	10	0	0				
Interest	148	11	1				
Profit on first half year	604	3	8				
Profit on second half year	765	6	4				
	£7651	16	1		£7651	16	1

The CHAIRMAN, in moving the adoption of the report and accounts for the year, remarked that it must be very satisfactory to the shareholders to find the company still in so good a position—in fact, a better position than so many other gas companies at the present day. They were proposing to draw upon the reserved profits made in more prosperous times, but that was the legitimate object contemplated when the reserve-fund was put by from year to year. They had, in 1874, to work on coals at a high price, and sell coke at a low price; but as coals were, he hoped, getting cheaper, he believed their position would improve, and then, probably, they might be able to repay to the reserve-fund what they were now withdrawing from it. The directors and himself would be glad to supply any information which the shareholders might desire, if they had any questions to put to them as to the accounts or the report.

Mr. R. G. TODHUNTER having seconded the adoption of the report and accounts, it was carried unanimously.

Mr. A. FILMER moved the next resolution, declaring dividends as recommended in the report—viz., a dividend for the half year of 4s. per share on the A or preference shares, and 10s. per share on the B shares, with a dividend at the same rate on the paid-up calls of the B* shares, these making, with the interim dividends paid in November last, 4 per cent. on the A shares, and 8 per cent. on the B and B* shares for the year.

Mr. J. T. LOCK seconded this resolution, which was carried *nem. con.*

Mr. R. L. H. MOLE then proposed that the retiring directors, Messrs. J. Cole, A. Filmer, and G. Filmer, be re-elected directors of the company. He highly eulogized the good management of the directors, and considered the accounts very satisfactory. Remembering the difficulties which had beset all gas companies recently, the present results were proof of the care and attention which the directors had bestowed on their duties. The three retiring directors were old and tried servants, and he asked his fellow-shareholders confidently to re-elect them.

Mr. R. MURTON seconded the proposition, which was carried without a dissentient.

The CHAIRMAN and his colleagues having thanked the meeting for their re-election, Mr. E. W. Brightman was unanimously re-elected auditor for the year, at a salary of £15.

Mr. R. G. TODHUNTER then called attention to the fact that the directors fees were apportioned equally amongst the directors, according, to their attendances; but as the chairman had the heaviest part of the work, and the greatest responsibility, he would now propose to increase the sum of £50 per annum, now paid, to £60, with the understanding that the additional £10 was to be a small recompense to the chairman for his duties beyond those as a director. They all knew how thoroughly their chairman performed his duties, and he (Mr. Todhunter) was sure they would entirely agree with the view he took in the matter.

Mr. BRETT seconded, and Mr. FRENCH supported, this proposal, which was unanimously agreed to.

The CHAIRMAN said he was not at all prepared for this proposal, but, as showing their approval of his exertions, it was very gratifying to him. He had, he was glad to say, the aid of a very able secretary, but still the attendances at the office, and other duties, necessarily took up much of his time. If they thought him worthy of this remuneration, he would accept it, and should be always wishful of doing his best for them.

Mr. S. J. DIBBS, in proposing a vote of thanks to the manager, Mr. W. T. Carpenter, spoke in the highest terms of that officer's efficiency and careful discharge of his duties. In the item of wages he found, although more gas had been made, there was a saving of nearly £60 for the year. He hoped, as soon as it was practicable, the salary of the manager would be increased, as he believed he was a most valuable servant.

The CHAIRMAN fully endorsed the view of Mr. Dibbs, and stated that the subject of an increase of the manager's salary was now under the consideration of the board.

The vote was unanimously passed, and briefly responded to by the MANAGER.

Mr. R. L. H. MOLE, in proposing a vote of thanks to the secretary, Mr. A. W. Marks, said he had had full opportunities of proving their secretary was fully up to his work. He was just fitted for his position, and he was sure they would have to search a long while to find a shrewder, more thoroughly able and persevering man of business. Much of the company's success was, he was sure, due to the ability and care displayed by their secretary, and the exactness with which all the books were kept, and other duties discharged. He (Mr. Mole) hoped they would long retain his services, as everything depended on a faithful discharge of the duties of secretary, and they would be very sorry to part with Mr. Marks for that reason.

The vote, having been supported by the chairman and several other shareholders, was passed, and responded to by the SECRETARY in a few words of thanks.

Votes of thanks to the board of directors and to the chairman of the meeting closed the proceedings for the year.

METROPOLIS WATER SUPPLY.

The following are the returns of the Society of Medical Officers of Health on the composition and quality of the metropolitan waters in March, 1875:—

NAMES OF WATER COMPANIES.	Total Solid Matter per Gallon.	Oxygen required by Organic Matter, &c.	Nitrogen. As Nitrates, &c.	Nitrogen. As Ammonia.	Hardness. Before Boiling.	Hardness. After Boiling.
Thames Water Companies.	Grs.	Grs.	Grs.	Grs.	Degs.	Degs.
Grand Junction	19·31	0·085	0·165	0·002	14·0	4·2
West Middlesex	20·06	0·056	0·165	0·001	14·2	4·1
Southwark and Vauxhall	19·89	0·095	0·166	0·002	14·3	4·3
Chelsea	19·71	0·083	0·187	0·001	14·3	4·3
Lambeth	20·12	0·061	0·191	0·001	14·4	4·4
Other Companies.						
Kent	27·89	0·009	0·287	0·000	20·8	6·0
New River	20·07	0·016	0·187	0·000	15·2	4·0
East London	23·90	0·054	0·221	0·002	16·2	4·4

Note.—The amount of oxygen required to oxidize the organic matter, nitrites, &c., is determined by a standard solution of permanganate of potash acting for three hours; and in the case of the metropolitan waters the quantity of organic matter is about eight times the amount of oxygen required by it.

The water was found to be clear and nearly colourless in all cases but the following, when it was slightly turbid—namely, in those of the Grand Junction, Southwark and Vauxhall, Chelsea, and Lambeth Companies. The average quantity of water supplied daily to the metropolis during the preceding month was, according to the returns of the water companies to the Society of Medical Officers of Health, 109,527,033 gallons; and the number of houses supplied was 515,346. This is at the rate of 32·2 gallons per head of the population daily. The last official return from Paris stated that the average daily supply per head of the population was 31·9 gallons; but this includes the water used for the public fountains, and for the ornamental waters in the Bois de Vincennes and the Bois de Boulogne.

HY. LETHEBY, M.B.

CITY SEWERS COURT.—At the meeting of the commissioners on Tuesday last, Mr. J. T. Bedford moved that the erection of stand-pipes in the courts and alleys of the City, ordered by the commission in November last, but subsequently postponed, be forthwith proceeded with. He observed that there could be no difference of opinion as to the necessity for providing a better supply of water for the poor, especially after the recent report of the medical officer of health. At present the inhabitants of the lower and poorer districts of the City had the greatest difficulty in obtaining good and wholesome water. Their cisterns and water-butts were in wretched and dilapidated condition, and the instances which Dr. Saunders had given of their abuse were really painful to read, and reflected no credit on the commission. If some wealthy citizens were to apply to the court to promote their convenience and comfort by laying down a quiet pavement, the request would be ungrudgingly granted, though, as was the fact, the expenditure involved £20,000 a year; but if, on the other hand, it was a mere question of better supplying the poor with water, at a cost of £1000, the matter would give rise to much discussion and endless postponement. The New River Company had promised not to charge anything for the additional supply, and it was, therefore, a simple question as to the erection or not of the stand-pipes. Mr. Clark explained that the delay had arisen from the fact that the Gas and Water Committee of the corporation were now considering the advisability of erecting hydrants throughout the City for better protection against fire, and it was thought likely that the provision of stand-pipes would form part of their scheme. Mr. Lowman Taylor considered the proposal of Mr. Bedford the best way of effecting what they all desired. Mr. Haywood, the engineer, replying to Mr. J. C. Davis, said the total cost of erecting the stand-pipes would be £1475, and that the cost of maintaining them would be trivial. After a further explanation, by Mr. F. Cox, of the cause of delay, the commission unanimously adopted Mr. Bedford's resolution, and the court gave orders for the immediate execution of the work.

AN AMATEUR WATER SUPPLY BILL.

[From the *Saturday Review*.]

Water and gas are favourite subjects for the speculations of ill-informed theorists, and the large capital invested in both kinds of undertakings exercises a strong attraction on predatory projectors. During the present year the Metropolitan Board of Works has wasted many thousands of pounds on the preparation of bills for the compulsory purchase of the property of the gas companies, with no intelligible object except to frighten the shareholders into a surrender of their property for an inadequate price. Having been disappointed in their hope of intimidation, the Board of Works coolly dropped their bills for compulsory purchase and for the establishment of competitive sources of supply; but they still hope to depreciate the value of the shares by a third bill for imposing new conditions on the companies, although they have conformed to the existing law. Sir James Hogg lately stated in the House of Commons that he still proposed to ask powers from Parliament for the regulation and the purchase of the undertakings of the gas companies. In other words, the Board of Works still threaten to prosecute in a future session the measures which they recently abandoned as hopeless; and in the meantime Parliament is asked to lower the value of the property which is hereafter to be the subject of compulsory purchase. The acquisition by the board of the less profitable right of supplying water is for the present deferred; and the ground which has been left vacant by the Board of Works is already occupied by unauthorized volunteers. The Metropolis Water Supply and Fire Prevention Bill, introduced by Colonel Beresford, Sir Charles Russell, Mr. Forsyth, and Mr. Ritchie, is the silliest project of legislation which has yet been devised, even in relation to the tempting subject of water. The title is inapplicable to the provisions of the bill, and the recitals of the preamble are not justified by corresponding clauses. It is hardly probable that Colonel Beresford and his associates will seriously ask the House

of Commons to consider their childish proposal; nor is it easy to understand how three or four respectable members can have lent their names to a useless and absurd project. In the second paragraph of the preamble, the promoters allege that "larger powers and greater freedom of action may be properly entrusted and allowed to a public commission than to companies carrying on undertakings for their own benefit." It has not hitherto been thought desirable to entrust large and indefinite powers to boards and commissions nominated by the Government of the day. The Crown, or the minister, is to regulate, by Order in Council, the constitution of the commission, the remuneration of its members, and all other matters of the same kind. To this anomalous body is to be tranferred the whole property of the metropolitan water companies, on terms specified in the bill.

The description of the measure as a "bill for making more effectual provision for a constant supply of water, and for the protection of life and property against fire in the metropolis," has already misled hasty and credulous critics. The commission will neither provide additional facilities for obtaining a constant supply of water, nor will it directly or indirectly increase the existing protection for life and property. It was stated in an article in *The Times* that the commission is to have power to provide at its own cost the domestic fittings which are necessary for constant supply. It may perhaps have seemed probable that the bill should contain enactments in some degree corresponding to the sonorous recitals of the preamble; but, on the other hand, the commentator might have remembered that not even the authors of the Metropolis Water Bill would have asked Parliament to confer on a paid commission an unlimited power of taxing the consumers for the benefit of a portion of their number. There is, in fact, no provision whatever for the supply of domestic fittings beyond the enactments of the existing law. The writer in *The Times*, being little familiar with the subject, was perhaps misled by a provision that the commission is authorized "to put the works into a condition for maintenance of constant supply at high pressure." Inquiry from competent interpreters would have satisfied him that works are not fittings, but that they are the machinery by which water is supplied. The mistake is more excusable than the assumption made by the framers of the bill that their commission would need any powers of the kind. The companies are by the Water Act of 1871 not only authorized, but compelled, to adapt their works to the maintenance of constant pressure; and some of the companies have already introduced constant service in the greater part of their respective districts. The delay in the universal adoption of constant supply is exclusively caused by the difficulty of inducing owners and occupiers of houses to provide the necessary fittings. The commissioners would have no additional means of overcoming their repugnance or indolence; and the authors of the bill have not thought proper to introduce into the body of the measure the "larger powers and greater freedom of action" which they claim in the preamble for their commission as contrasted with private companies. No clause in the bill confers any additional facilities for "securing a constant supply of water to all classes of houses." The commission is empowered to fix hydrants for security against fire; but the duty of providing hydrants is at present imposed on the local authorities, who can, after discharging their own duty, compel the companies to provide them with a constant supply of water. The insufficient provision of water for the extinction of fire is exclusively due to the negligence of the Metropolitan Board of Works. It is certain that Parliament will never transfer from elected bodies to an irresponsible commission the duty and the right of providing securities against fire.

The first in order of the powers to be conferred on the commission is, in the slipshod language of the bill, "to combine, as far as physical conditions admit, the sources of supply and works of the several companies." According to *The Times*, the commission is to have special powers to extend and improve the present supply; but, as in the case of domestic fittings, the writer has imagined enactments which are not to be found in the bill. It would be interesting to ascertain whether the promoters have had the curiosity to make themselves acquainted with the present sources of the metropolitan water supply. On inquiry, they will learn that one-half of the metropolis, omitting the district of the Kent Company in the south-east, is supplied from the Lea and the New River, both issuing from the chalk hills in Hertfordshire; and that the western part of London receives its water from nearly the same reaches of the Thames immediately above Teddington. If the provisions of the bill have any practical meaning, the commission will be authorized to turn the Lea and the New River into the Thames, for the converse operation would scarcely occur even to an idle legislative projector. Physical conditions would, perhaps, be more favourable to the union of the natural flow of the Lea with the waters of the artificial channel of the New River, but the youngest student in an engineer's office could inform the promoters that any experiment of the kind would be an absurd and useless waste of money. The combination of the sources of supply, and of the works of the companies which take water from the Thames, would be not less purposeless, even if it were practicable. The sources of supply are already so far combined that they are almost identical, and the pumping machinery and distributive apparatus are adapted to the demands of each district, and must be maintained in their present condition, even if the ownership were transferred to a public body, or if the companies were already connected. The ignornce and carelessness of amateur legislators are not merely negative faults.

It must be supposed, in default of any other explanation, that the projected combination of sources of supply is contemplated in the whimsical language of the preamble. No other clause in the bill seems to "tend to economy, and the consequent provision of funds, by means whereof the poorer class of houses may be supplied with fittings for receiving a constant supply." Even if the union of the Lea and New River were effected, and if money were saved by the costly and unprofitable operation, there is no clause in the bill which would authorize the commissioners to apply the proceeds to the supply of fittings for the poorer class of houses. The promoters probably contemplated some arrangement of the kind when they framed the preamble; but counsellors wiser than themselves, have apparently convinced them that Parliament would not allow a commission to tax the mass of consumers for the benefit, not of the poor, but of the possibly wealthy owners of houses with poor occupiers. Although it is hardly worth while to examine in further detail, the provisions of a scheme which is only not injurious because it is inclined to be abortive, a certain interest attaches to the provision which is made for compensation to the shareholders of water companies. The promoters propose to buy the property by compulsion on the basis of the average revenue for five years, without inquiring into the financial prospects or proprietary rights, of which the companies are to be summarily dispossessed. Any company which might have received for five years its maximum dividend would probably be compensated in full; but it might well happen that another company, having expended a large capital in the hope of future profit, would lose half its property under the provisions of the bill. The House of Commons will be culpably careless if it fails to reject the Metropolis Water Bill on the second reading. It would be extremely unfair to compel the companies to waste their money, in which the consumers have a contingent interest, in resisting a measure which is too ridiculous to pass.

PUBLIC LIGHTING IN NEW YORK.

The following particulars are taken from the *American Gaslight Journal*, the figures having been converted into English currency.

Commissioner Van Nort makes the following comparative statement of the cost of lighting and maintaining the public lamps in the four largest cities in the union—viz., New York, Brooklyn, Boston, and Philadelphia:—

Cities.	Number of Lamps.	Total Cost for 1874.	Cost per Lamp per Annum.
New York	16,667	£122,553 7 0	£6 18 9
Brooklyn	13,521	114,839 0 4	6 13 0
Boston	9,346	88,189 3 1	9 8 7
*Philadelphia	9,905	113,644 9 5	11 1 5

The cost of lighting the public lamps in New York for 1874 would be—

At the rate of cost in Brooklyn	£152,642 17 11	per annum.
" " Boston	166,564 9 6	"
" " Philadelphia	199,107 1 10	"

Difference in favour of New York—

As compared with Brooklyn	£30,089 10 11	per annum.
" " Boston	44,011 2 6	"
" " Philadelphia	76,553 14 10	"

LIVERPOOL UNITED GASLIGHT COMPANY.

REPORT OF THE COMPANY'S ENGINEER ON THE BOROUGH ENGINEER'S REPORT RELATIVE TO THE CONTRACT FOR LIGHTING THE PUBLIC LAMPS.

To the Directors of the Liverpool United Gaslight Company.

Liverpool, March 10, 1875.

Gentlemen,—In accordance with the resolution passed at your last meeting, held on the 24th of February—"that the borough engineer's report of the 20th of January, 1875, to the Special Gas Supply Committee of the Corporation of Liverpool, as to the contract between the gas company and the corporation, be referred to the company's engineer for his report thereon"—I beg to submit the following report for your consideration:—

It is convenient to take the various subjects in the order in which they are discussed in the report of the borough engineer.

I.—*As to the Illuminating Power of the Gas.*

The figures given in the borough engineer's report show that, even according to his own statement, the prescribed quality of the gas supplied by this company was, at all events, fully maintained until the year 1872, and as my own examinations show an equally satisfactory result, it is unnecessary to burden this report with any figures prior to that date.

The following results have been obtained from my own experiments at the testing-room at Duke Street. This situation, or any other near the centre of the town, is well adapted for the purpose, as the pipes are so connected that it is impossible to determine from which of the works the supply is being obtained. There are also connecting mains between the various manufacturing stations, and the gas is frequently passed from one to the other before being distributed to the town. It, therefore, follows that the gas as tested at Duke Street fairly represents the average quality of the supply.

The burner used is known as "Sugg's No. 7 steatite bat's-wing," and was selected as being the burner employed by the gas referees in London (appointed in the interests of the consumers) for testing gas of the illuminating power of 20 candles and upwards, and is well known as a standard burner for that quality of gas.

The sperm candles are made by Messrs. Brecknell, Turner, and Sons, of the Haymarket, one of the best firms in London, and are prepared with great care for gas-testing purposes. They are largely supplied both to gas companies and corporations.

The gas, in testing, is consumed at the prescribed rate of 5 cubic feet per hour.

Illuminating Power of Gas, as Tested at Gas Office, Duke Street.

Date.	Maximum Illuminating Power.	Minimum Illuminating Power.	Average of Each Year.
	Sperm Candles.	Sperm Candles.	
1871	23·66	19·83	21·29
1872	22·76	21·15	21·59
1873	22·20	20·64	21·18
1874	24·44	19·91	21·53

Monthly Particulars for 1874, *&c.*

Date.	Maximum Illuminating Power.	Minimum Illuminating Power.	Average of Each Month.
1874.	Sperm Candles.	Sperm Candles.	
January	21·54	21·37	21·46
February	21·78	20·18	20·76
March	21·86	19·91	21·00
April	22·51	19·94	21·48
May	22·81	20·85	21·63
June	22·07	20·36	21·13
July	23·12	22·91	23·01
August	21·44	20·23	20·94
September	23·87	20·14	21·60
October	24·44	20·59	22·15
November	24·37	20·88	21·86
December	23·09	20·65	21·52
1875.			
January	23·93	20·87	22·12
February	22·45	20·42	21·33

These experiments show that the quality of the gas has been maintained above the standard required by the Act of Parliament, except on three occasions—viz., Oct. 20, 1871, 19·83 candles; March 27, 1874, 19·91 candles; and on April 1, 1874, 19·94 candles—on each of which exceptional occasions the illuminating power of the gas was deficient only to the extent of a very small fraction of a candle, and I believe that there is no town in England, with the exception of a small district in London, where gas of such high quality is supplied.

As regards the results obtained by the borough engineer, he remarks at page 6 of his report, "that the test from which the results" in the table given by him "are obtained, were in conformity with section 10 of the Liverpool Gas Company's Act, 1865, excepting as regards the burner;" but this is a matter of primary importance, and it might be said with as much propriety that the weight of any substance had been accurately ascertained, and that every detail had been carefully attended to, with the exception of the scales, which were defective, as that in no other respect, "than as regards the burner have the recorded tests of the illuminating power of the gas been materially wanting in accuracy."

It is a well-known fact, as admitted by the borough engineer, that if the illuminating power of gas for a consumption of 5 cubic feet per hour be deduced from a smaller consumption, assuming that the light is in direct proportion to the quantity consumed, the result will be erroneous. Thus, in the want of attention to the burner and the rate of consumption, are pointed out two sources of error which seriously affects the correctness of the experiments. Independently, however, of all photometrical tests, the quality of the material used by the company was such as must have produced gas of a much greater illuminating power than many of the results stated in the borough engineer's report.

At the end of this report there will be found a diagram of the "Average Illuminating Power of the Gas," as stated in the above table, compared with results given on page 5 of the borough engineer's report for the same period.

Before leaving this part of the subject, I may mention that on the 20th of

* Gas-works owned by the city corporation.

February, 1874—long before the appointment of the special committee of the council as to gas supply—a member of the Town Council, Mr. J. A. Forrest, without any previous intimation, requested permission to ascertain the illuminating power of the gas supplied to the town; he was asked to come at once to the office in Duke Street, where the gas was tested in his presence, and he examined all the details of the process. On that day the illuminating power was 20·93 candles, and Mr. Forrest expressed himself much pleased with the result. On the same afternoon the borough engineer also called, and was asked to test the gas, but declined to do so, and an invitation was then given to him to call at any time that might suit his convenience.

As to the Time of Lighting and Extinguishing the Public Lamps.

Great care is taken to send the lamplighters to their work at the proper times both morning and evening, so that the lamps may be lighted and extinguished in accordance with the schedule of the contract, and as the borough engineer admits that the hours have been well observed, it is unnecessary that I should say more on this matter.

As to the Quantity of Gas Consumed by the Public Lamps.

For the purpose of ascertaining how far the obligations imposed on the company by their contract with the corporation were being fulfilled, the following experiments were made:—

First Experiment, Oct. 13, 1874.—The average consumption of 24 lamps in the following street, viz.:—Brunswick Street, Cook Street, Victoria Street, Old Haymarket, Fontenoy Street, Cow Lane, Hodson Street, Byrom Street, Hunter Street, Clayton Street, Islington Place, and Islington, was found to be 4·56 cubic feet per lamp per hour. In making this experiment the object was to secure as far as possible an average result by selecting lamps that appeared either larger or smaller than usual; but it was felt that to obtain a fair average in this manner is most difficult, and therefore two further experiments were made.

Second Experiment, Oct. 15, 1874.—In this instance the first lamp on the east boundary of the borough, at the corner of Deane Road and Prescot Road, was selected as the starting point, and every fifth lamp was examined between that place and the bottom of Water Street, the line of streets being Prescot Road, Prescot Street, London Road, William Brown Street, Dale Street, and Water Street, the average consumption of 24 lamps being 4·39 cubic feet per lamp per hour.

Third Experiment, Oct. 16 & 20, 1874.—The starting point was the lamp on the north boundary of the borough in Stanley Road, Kirkdale, and every fifth lamp was examined between that place and the Dingle, along the following streets, viz.:—Stanley Road, Scotland Road, St. Anne Street, Norton Street, Seymour Street, Russell Street, Clarence Street, Rodney Street, St. James's Road, Blair Street, South Chester Street, Park Road, and Dingle Lane, the average consumption of 35 lamps being 4·31 cubic feet per lamp per hour.

As the results of these experiments agreed so closely with each other, and showed an average consumption per lamp exceeding the 4·0 cubic feet per hour specified in the contract with the corporation, and as the observations extended over so large a portion of the borough, no further examination was then made.

On the 15th of December, 1874, in accordance with the request of the borough engineer, lamps (shown by yellow spots on map) in various parts of the town were visited by an officer of the corporation in company with an officer of this company, and 10 burners, chosen by the representative of the corporation, were removed by him and retained in his custody, and afterwards tested by the borough engineer; the results of which testing are given on page 12 of his report. On receiving a copy of this report, and looking over these figures, I was so much surprised at some of the results that I asked the borough engineer to repeat his experiments in my presence; this he at once consented to do, and on the next page is given the statement published in his report, with two additional columns, in which are shown the results of the second testing, which are admitted by both of us to be correct, and the per centage of error discovered on making the joint examination.

Locality.	Pressure at Burner in Inches of Water.	Approximate Time of Observation. P.M.	Cubic Feet Consumed per Hour at this Pressure, as Tested by the Borough Engineer.	Cubic Feet Consumed per Hour, as Tested by Borough and Gas Company's Engineers jointly, and agreed to as correct.	Per Centage of Error in First Testings.
		H. M.			
1. Grafton Street . . .	0·65	5 30	2·76	3·00	8·69
2. North Hill Street . .	0·50	6 10	2·22	2·46	10·81
3. Parliament Street . .	0·45	6 30	2·28	2·56	12·28
4. Daulby Street . . .	0·48	6 45	2·16	2·46	13·89
5. Boaler Street . . .	0·68	7 10	3·60	3·86	7·22
6. Heyworth Street . .	0·55	7 45	3·24	3·30	1·85
7. Belle Street. . . .	1·00	8 15	4·92	5·32	8·13
8. Great Howard Street .	1·80	8 30	3·78	5·62	48·68
9. St. George's Crescent .	0·90	8 50	4·56	4·94	8·33
10. Bold Street	0·98	9 0	4·02	4·24	5·47
Average	0·799	..	3·354	3·776	12·58

Thus it will be seen that the errors in the first experiments vary from 1·85 per cent. in lamp No. 6, to 48·68 per cent. in lamp No. 8. The average consumption of the 10 lamps, when correctly ascertained, being 3·776 cubic feet per hour, instead of 3·354 cubic feet per hour as stated in the borough engineer's report.

At your last meeting a letter was read from the town-clerk, requesting, on behalf of the corporation, that I might receive your instructions "to co-operate with the borough engineer in testing the quantity of gas consumed by a sufficient number of the public lamps to afford a reliable test of the quantity consumed per hour;" a resolution to this effect was at once passed, and I have now to lay before you the result of our joint observations.

It was felt that the 10 lamps previously examined were too small a number to give an average result for the town, and the following test was considered, both by the borough engineer and myself, as quite impartial and reliable.

On the evening of the 2nd of March, 1875, immediately before the commencement of the experiment, a map of Liverpool was placed on a table, face downwards, and the borough engineer was requested to prick the paper in any two places. On examining the map it was found that the points were in Belmont Road and the Albert Dock. A line (GH on map) was drawn across the borough through these two points, and every fifth lamp was tested in the streets nearest to this line.

The burners from 24 lamps were thus removed and placed under the care of the borough engineer, and on the following day were tested by us, when the average consumption per lamp was found to be 4·128 cubic feet per hour.

On Thursday, the 4th of March, a similar plan was adopted for determining the line of lamps to be examined, and in this case the line (IK on map) extended from Collingwood Dock to Smithdown Road Cemetery. The borough engineer wished to examine every fourth lamp instead of every fifth, as in the preceding experiment; this was done, and the average consumption of 35 lamps proved to be 4·245 cubic feet per hour.

On Tuesday, the 9th of March, a third and similar experiment was made in the line (LM on map) of streets extending from Cobourg Dock to Spellow Lane, Walton; every fourth lamp was tested, and the average consumption of 40 burners was found to be 4·109 cubic feet per hour.

Considerable differences were found to exist in the consumption of the various lamps, and practically this will always be more or less the case, but it cannot fail to be observed how nearly all the experiments agree, when taken on a sufficient number of lamps to give a reliable test, and prove most conclusively that the average consumption of the lamps is 4·247 cubic feet per hour, or 6·175 per cent. above the contract quantity, and that there is, therefore, no ground for the supposition that the company receive payment for a larger quantity of gas than is actually supplied to the corporation.

Result of Testing Public Lamps—Gas Company's Experiments.

Date. 1874.	Number of Lamps Tested.	Average Consumption per Hour. Cubic Feet.
Oct. 13	24	4·56
„ 15	24	4·39
„ 16 and 20	35	4·31
Total	83 Average . .	4·407

Joint Experiments of Gas Company and Corporation.

Date. 1874.	Number of Lamps Tested.	Average Consumption per Hour. Cubic Feet.
Dec. 15	10	3·776
1875.		
March 2	24	4·128
„ 4	35	4·244
„ 9	40	4·109
Total	109 Average . .	4·126

Average of all the experiments: 192 lamps; consumption, 4·247 cubic feet per hour.

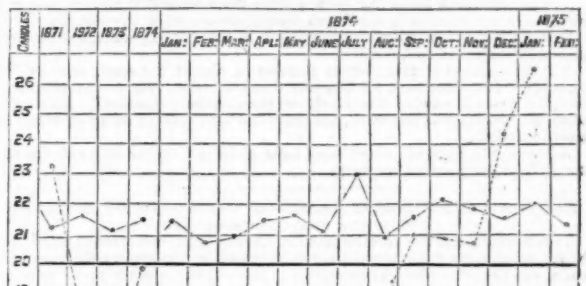
I cannot concur in the borough engineer's suggestion that the burners used in the lamps should be made to consume the contract quantity of 4 cubic feet per hour at a lower pressure than at present. In order to give a proper supply to private consumers, the pressure in the mains must be greater than is required merely for the street-lamps; any irregularities now observed in the consumption arise principally from obstructions in the small stop-cocks used for regulating the pressure, and if the burners were to be opened so as to consume the full quantity at a lower pressure, the regulating taps would have to be turned down still more, and the chances of obstruction would be considerably increased.

In conclusion, permit me to say that your instructions having always been that the illuminating power of the gas should be maintained at its proper standard, I have much pleasure in submitting the figures contained in the foregoing report, as I believe that they prove that your directions have been carried out, and that the obligations imposed upon the company, both by the Act of Parliament and by the contract with the corporation, have been fairly and honourably discharged.—I have the honour to be, your obedient servant,

WILLIAM KING, Engineer.

AVERAGE ILLUMINATING POWER OF GAS.

Gas Company's Experiments shown by continuous line.
Corporation Experiments shown by dotted line.



IRON AND COAL TRADES OF SHEFFIELD, SOUTH YORKSHIRE, AND NORTH DERBYSHIRE.

(FROM OUR OWN CORRESPONDENT.)

The iron trade remains quiet, and would appear likely to continue in that condition during the ensuing quarter, should the decision of the Staffordshire ironmasters not to reduce prices have the usual effect upon the producers of this locality. Many local iron firms appear, however, by no means disposed to follow the usual lead, and are already offering merchant iron at about 10s. per ton lower than the rates which have lately been current.

It is not by any means improbable that the foundry proprietors will take advantage of the reductions in the price of fuel to lower their prices somewhat, in order to endeavour to give a stimulus to that branch of trade which it, with other departments, stands in need of. Many of the leading foundries are, nevertheless, producing a very respectable output of work, chiefly gas and water pipes and large colliery castings for this neighbourhood. Pig iron is quiet at the following prices for Cleveland brands:—No. 1 foundry, 64s.; No. 2 foundry, 61s.; No. 3 foundry, 59s.; No. 4 foundry, 57s.; No. 4 forge, grey, 56s.; No. 5 forge, mottled, 55s.; No. 6 forge, white, 53s. 6d.; refined metal, 77s.; Kentledge, 65s., and cinder pig, 44s. per ton. The brassfounders are still doing a large amount of business.

Now that the question of lowering the miners wages has been peaceably disposed of, the colliery owners have turned their attention to the rate of payment received by the topmen and other above-ground colliery workmen, and have arrived at the conclusion to reduce their wages by about 5 per cent. As they, however, are not paid at an uniform rate, the drop will not be alike at all the pits, but may, in some cases, reach 10 per cent. It will come into operation the next pay day but one from this week.

Concurrently with these alterations of wages, comes a settlement in some of the prices of fuel. One or two of the local colliery proprietors have already given notice of a drop of about 1s. per ton, and others may be expected to follow in the course of the next week or ten days.

IRON AND COAL TRADES OF SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE.

(FROM OUR OWN CORRESPONDENT.)

In consequence of the holidays, and the present unsatisfactory aspect of affairs in the iron trade of this district, business has been almost suspended since last report; nevertheless, nearly all the leading firms have now notified

their intention of maintaining existing quotations, in consequence of the decision come to by the Associated Coalmasters last week, while second-class makers declare themselves still less able to make any concession in price, owing to the low rates which already prevail, and which have been forced upon them by the slackness of trade, and the severe competition of other districts, which necessarily affect unmarked iron more than noted brands.

Though some descriptions of the better class of finished iron are still in demand, there is nothing like activity in any department of the trade, and on all sides production is being curtailed.

The Wages Committee met on Wednesday last, at the offices of the accountant to the Conciliation Board (Mr. B. Smith, Wolverhampton), when the mean average selling price of bars in the two districts (Cleveland and South Staffordshire) was shown to be £9 11s. 5½d. This brought down wages 2½ per cent., and brought puddling to the minimum under the present scale—viz., 9s. 6d. per ton. This scale will remain in force until July 3 next. On the 4th of May a representative meeting of both masters and men will be held in London to settle the future scale.

The pig iron market is quiet, but steady, hot-blast native all-mine being quoted £5, and cinder £3 to £3 5s.

The dispute in the tube trade at Wednesbury remains unsettled, the operatives continuing to receive substantial relief, and it is stated that the men intend, if possible, to start a tube factory on the co-operative principle, but it is doubtful if sufficient funds will be forthcoming.

The coal trade is inactive, and prices are maintained with difficulty. Notwithstanding the recent decision of the Associated Masters, there is a growing opinion in all parts of the district that a reduction in prices will be declared at no distant date; meanwhile stocks are accumulating, though many of the collieries are only in partial operation.

THE COAL AND IRON TRADES OF LANCASHIRE.

(FROM OUR OWN CORRESPONDENT.)

Although the milder weather has somewhat tended to decrease the demand for house coal, and there has been a little hanging back on the part of consumers generally, in the expectation of a reduction in prices, a good steady trade continues to be done in the Manchester market, and there is no pressure whatever to sell the better classes, both house and steam coal. Prices consequently remain without change from last month, and there is every indication that, at any rate in this market, they may be maintained until the end of April. Some of the commoner qualities of furnace and engine coal are being pushed at low prices, but this does not affect the market, so far as the leading firms are concerned, and as there are no stocks on hand, there is no inducement to compete with the sellers of low-class coals.

In the gas coal trade it is, as yet, too early for the usual contracts, but many of the gas consumers are now preparing for them, and there are a good many inquiries in the market. In the Wigan district, the pit quotations are about as under:—Ordinary gas cannel, 28s. to 29s. per ton; best screened gas coal, 14s. to 14s. 6d. per ton; and unscreened coal, 12s. to 12s. 3d. per ton.

There is no material change to notice in the principal coal-producing districts. Although there is a weakening tendency in common coal, March quotations are, as a rule, still maintained. Consumers, however, are pressing for reductions, which it is expected will not be long withheld.

In the coke trade there has been a little more animation than of late, and hard cokes at the ovens in the Wigan district are quoted at 16s. per ton.

There has also been a little improvement in the shipping trade, but business generally continues dull.

The iron market of this district remains in almost the same state as last reported. There has been no business doing in either pig or manufactured iron, consumers waiting the result of the quarterly meetings. Nominally prices are the same as last week, but there has been nothing doing on which to base quotations.

A few of the finished ironworkers have sufficient orders on hand, but the majority of them are rather slack.

THE COAL AND GENERAL TRADE OF THE NORTH OF ENGLAND.

(FROM OUR OWN CORRESPONDENT.)

In consequence of the London market having been overstocked, there has been a continuous but somewhat slight falling off in the inquiry for household coals, and the same observation applies to gas. There appears to be now an abundance of coasting vessels in the coal ports. The supply seems to be quite equal to the demand, and coasting rates have fallen off from about 3d. to 6d. per ton all round. A demand has now set in for manufacturing coals for shipment, and this branch of the trade, which has been so depressed for a considerable period, was firmer in tone last week, and the colliery offices were less inclined to press small coals into the market. The belief that the South Wales dispute is a considerable way from being settled is undoubtedly having a hardening effect on the steam coal trade of Northumberland. Intimation has been made that the official quotation of 16s. per ton for best qualities will be maintained by the colliery offices, and a comparatively steady demand has set in for these sorts at the price, especially for the Mediterranean. The Baltic ports are not open yet—not to any extent, that is; and the protracted winter will undoubtedly have some effect upon the fortunes of the north country coal trade, when that sea is open. But it should be kept in mind that the Tyne and Wear are subjected to a very keen competition from the Scotch and Yorkshire collieries, especially those pits shipping in the Firth of Forth and at Hull and Goole. They undersell the north country coals in second-class qualities, and a good few small foreigners find their way there to load.

The Cleveland iron trade was quite as good last week as the week before. The stock of pig iron seems to be diminishing. The prices of pig were based upon 58s. 6d. and 59s. for No. 3 Cleveland. Last week there was a better inquiry for finished iron, but the most experienced men in the trade are reported to say that this department of industry will not materially improve until the prices of rails are much lower than they are at present.

The chemical trade of the district is getting firmer. There were considerable shipments to the Continent by steamers and sailing vessels last week. Some articles which are scarce, increase in value. The dispute between the employers of two large factories on the Tyne and their men, which has continued for several weeks, has gone to arbitration. The arbitrators are now holding an inquiry, and it is anticipated that an award will be made shortly.

The fire-clay goods trade of the Tyne is very good. One or two of the large factories especially are well supplied with orders, and the shipments go on pretty actively.

The labour market of the North seems to be in a better condition than it was some time ago. As the days have lengthened, more men have got into employment, and, upon the whole, affairs are tolerably satisfactory in this particular. The hungering that some of the men got last winter is likely to have a good effect upon many of them by inducing them to follow their employment more steadily, and not to extend their drinking over Monday; that is, those who are disposed to do it. There is a great improvement amongst the miners in that particular in especial.

TRADE NOTES FROM SCOTLAND.

(FROM OUR OWN CORRESPONDENT)

The gas question was "up" again before the Glasgow Town Council, sitting as the Gas Commission, on Thursday last. Mr. Walls, in the absence of Mr. Treasurer Miller, said that the Gas Committee had been considering the propriety of erecting an apparatus for testing coal at each of the works belonging to the corporation, and that it had finally been resolved to have one erected at the Dalmarnock works. After a conversation resulting from a question asked by ex-Bailie Moir, a former member of the Gas Committee, in reference to the value of the Malam process of manufacturing gas, it was resolved, as an instruction to the committee, that they should have it practically tested in connexion with the city works. At the same meeting of the Gas Commissioners it was resolved, on the motion of Mr. Walls, to petition against Sir Wyndham Anstruther's gas bill, which aims at authorizing the erection of new works for the supply of gas in populous places, or the acquisition of the existing works therein.

As a result of the dissatisfaction which has for some time existed among the gas consumers of Blairgowrie, both as to cost and quality of the gas supplied, a meeting was recently held, at which a report was submitted from a committee that had been appointed to meet the directors of the gas company, the answers from whom were deemed very unsatisfactory. They observed that the consumption of gas was wholly in the hands of the consumers; that they had required their manager to produce gas of not less than 31, nor more than 34 candles of illuminating quality; that they used coal recommended by engineers of eminence; that they had hitherto supplied gas at the lowest possible price; and that any alteration in the price would depend on the result of the next balance.

A very long statement in reply to the gas consumers of Helensburgh has been issued by the directors of the gas company of that town. After referring at length to five separate charges made against them, they conclude by expressing a hope for better times, and say they have agreed to a reduction of 10d. per 1000 cubic feet in May, and will be glad if they can make the reduction more. They also refer to Sir Wyndham Anstruther's gas bill, and say that if it should become law the Town Council will have it in their power to acquire the company's works on fair terms.

Mr. Alexander Young, gas manager, Alyth, is about to remove to Blairgowrie, where he is to occupy a similar position. The Blairgowrie Gas Company are to be congratulated on securing the services of a man who is both fit for his work and worthy of their highest trust, while he is at the same time without any ostentation or empty pretension. His predecessor, Mr. Young, has entered upon his duties at Forfar.

The Dunoon Gas Company are advertising for a manager; and the Kirkintilloch Gas Company are asking for tenders for the laying and jointing of a considerable stretch of gas-pipes for a new extension within their area of supply.

On the question of water supply there is activity on various hands. The Police Commissioners of Gourock, a sea-bathing town on the Firth of Clyde, about three miles from Greenock, are considering plans for the construction of a filter, and otherwise extending their works. The estimated expense of the proposed works is about £830.

The members of the Greenock Water Trust made their annual inspection of the water-works under their charge last Thursday. They found the depth of water in Loch Thom (which is high up in the Renfrewshire Hills) was 43 feet 1 inch, being equivalent to about four months supply for all purposes, and considerably in excess of what is required by the Act of Parliament at the present season of the year. The engineer to the Trust accompanied the party, and explained the nature and extent of the additional works, as authorized in the bill at present before Parliament. Everything was found to be in a satisfactory condition.

At last the Water Trustees of Edinburgh are having, or are likely to have, a stroke of good luck. Owing to some new arrangements with reference to the reservoir required in the Moorfoot Hills, they will be able to effect a saving of from £20,000 to £30,000 of the expenditure originally estimated for the reservoir portion of the Moorfoot water scheme.

Messrs. Leslie, the engineers for the Lintrathen Water-Works, now in progress for the Dundee Water Commission, have just reported favourably regarding the various portions of the contract. The manager (Mr. Watson) has also reported favourably of the progress that is being made by the several contractors.

The pig iron trade seems to have become even duller than it was a week ago. There has been some fluctuation in prices since last report, but further reductions in price took place in the market on Friday, the rates being 70s. 9d. to 70s. 3d. cash, and 70s. to 69s. 6d. one month fixed. Buyers were offering 70s. prompt cash at the close. Langloan No 1 was reduced 2s. per ton.

It is confidently expected that the wages question among the miners will take a definite shape in a few days, so far as the reduction is concerned. Prices of coal are again still lower.

GLASGOW WATER SUPPLY.—Mr. Gale, the engineer to the corporation, has submitted a report to the Water Committee on the system adopted in Liverpool for detecting waste of water, and its adaptation to the state of things in Glasgow. He remarks that Glasgow has already a constant supply of water, but it is accompanied by a consumption of 50 gallons per head per day. In Liverpool they sell 4 gallons per head per day by meter; in Glasgow 7 are sold, leaving 43 for domestic and trade purposes not supplied by meter. On account of the construction of the houses in Glasgow, he believes it would be impossible, or, if possible, not desirable, to return to the system of street wells and court standpipes, as is being done in Liverpool. In the Act of 1865 a clause was introduced giving powers to the commissioners to cause water to be led into each flat of tenements of houses, and with the co-operation of the sanitary officials this power has been exercised throughout the whole city, the work being done at the expense of the house proprietors. By dividing Glasgow into small districts, and putting in meters, as is being done in Liverpool, those districts which are most wasteful in the use of the water will be discovered, and the attention of the inspectors can then be specially directed to them; but unless all fittings of bad designs are removed, the necessity for frequent inspections will still remain, and even if all were done in this way that could be desired, it would only admit a possible reduction in the number of inspectors. Mr. Gale further states that he does not see any reason why a trial of a few experimental districts should not be made in Glasgow, repairs being made upon existing fittings, and observations made on the length of time these continue effective. After referring to two or three kinds of meters, Mr. Gale concludes as follows:—"In Liverpool the public water-rate amounts to £60,000 a year; in Glasgow it is £9600. In Liverpool the total revenue raised from water is £175,000 per annum for a supply for all purposes, 17½ million gallons a day, and their works are practically exhausted; here the revenue is £118,000 a year for 33 million gallons a day; so that, while they get 28 gallons per head per day in Liverpool, the inhabitants of Glasgow could have 78 gallons per head per day for the same money. This is no reason why we should waste water in Glasgow, but it shows the strong inducement they have to save it in Liverpool."

WATER SUPPLY OF ENGLAND.—The President of the Local Government Board (Mr. Selater-Booth) received on Friday last a deputation from the Social Science Association, to present a memorial asking for a Royal Commission to make a thorough and exhaustive inquiry into the important question of the water supply. The deputation was introduced by Mr. Lyon Playfair, M.P., who briefly drew the attention of Mr. Booth to the extreme importance of the provision of a good supply of water, especially in rural and mining districts. Mr. Michael said that in some localities, particularly in mining districts, there was an absolute water famine, and the great want was good and authoritative information as to the best means of providing a supply. This they thought would be met by the investigations of a Royal Commission. Mr. Bailey Denton com-

plained that the towns helped themselves to water at the expense of the villages, which were often left without any supply at all. He suggested that landowners should be empowered to store water, and supply it to their neighbours at a price which would recoup them the expense they incurred. Dr. Sandwith said they never could obtain pure water in London until they got out of the vicious circle of the water-closet, the river, and the mouth. What was wanted was an entirely fresh source of water. Dr. Farr, Dr. Guy, and others also spoke. The president, in reply, intimated that the Local Government Office were greatly impressed with the importance of the subject that they had brought under his special notice. They had done their best, in the legislation of this year, to provide some remedy for evils which, as they had justly said, were felt by all classes of the community in the country in a greater or less degree, and he would not fail to bring under the consideration of the Government their desire that an inquiry should take place into the question, although, as he had indicated just before, he thought it rather difficult to decide to what branch of the subject a Royal Commission could best direct its attention within a limited time. During the last season the inconvenience of a short supply of water had been felt in many districts in the country, and the Local Government Board issued orders directing the local authorities to use water-carts when no more satisfactory course could be taken, and excellent results had followed from this temporary and occasional assistance. The question of water supply had, he thought, been mixed up a little with two subjects that were not so directly connected with it as might at first sight appear. The question of interfering with the action of the water companies would add very greatly to the extent of an inquiry such as that indicated; for though there was, no doubt, much to be said against such companies providing one of the necessities of life, those places where water companies were in existence were in many cases better off than those places where there were no such means of obtaining a supply. With regard to the water supply of the metropolis, he reminded the deputation that it had received a careful inquiry at the hands of a Royal Commission some years ago, and it had reported that the Thames and Lea Valleys gave a very good supply to the metropolis, and that it would be sufficient for some years to come to meet the needs of the inhabitants. In conclusion, he could only say that he appreciated the importance of the subject, and would bring their views under the attention of the Government. Dr. Playfair said the Social Science Association would be happy to draw up a *précis* of the branches of the subject they wished the inquiry to be extended to.

The Court of Common Council and the Gas and Water Question.—In gas, water, and sanitary matters, as in others, generally speaking, the Court of Common Council inaugurates movements by references to committees. It may be well to see what references there are to committees as bearing on subjects in which we specially take an interest. The oldest of these "authorities to consider" has reference to drinking fountains. So long ago as 1865, Mr. John Symonds, still a member of the court, caused a petition to be referred for consideration to the Coal, Corn, and Finance Committee from the Metropolitan Free Drinking Fountains Association, praying the court to defray the costs of erecting two or more drinking fountains, on such sites as the corporation may deem fit. We presume that the fountain erected opposite Smithfield Market about a year ago does not "discharge" the reference, or, ere now, it would have been brought up to the court, for this kind of operation. There is a relationship in the consumption of water, and the use of it for baths. This consideration induces the notification here that in 1872 Deputy Stapleton persuaded the court to charge the General Purposes Committee with the consideration of the question of the construction of floating baths upon the Thames. They were instructed, of course, to report to the court, but they have not done so, perhaps on account of having been too much bewildered since 1865 with the reference of a letter from the solicitors of the "Deputy Day Oyster Meters," stating that a certain appointment was "not according to the ancient manner and form of appointment to the said office." The Gas and Water Committee have had before them, since 1871, at the instigation of Mr. Edmeston, an instruction to report upon the Metropolis Water Act of 1871, but up to the present moment they have taken no notice of it, notwithstanding that the court at the time denominated the law upon the metropolitan water supply as so "imperfect" as to demand new legislation with regard to it. The committee are not establishing a character for rapid despatch of work, for they seem to be tardy in their action upon the authority they have from the court to provide hydrants in the City for fire purposes. A short time ago the medical officer of health (Dr. S. Saunders) carried a recommendation of his to the Sewers Commission, that a given number of stand-pipes should be erected in specified courts—the New River Company acting very liberally in the matter—but, as soon as this sanitary provision was made, the committee suggested a joint patchwork enterprise, and so delayed both the erection of the hydrants and the stand-pipes. Mr. Deputy Stapleton, in 1870, succeeded in investing the committee with power "to inquire and report forthwith to this court as to whether it will be to the advantage of the public that the interests of the existing water companies should be purchased, and that the subsequent management should be vested in this corporation." When the motion was made for this reference the court impatiently listened to it. There is no necessity for saying it has not yet been reported upon, or is it likely to be for some time to come. The committee have been, if they are not still, in the throes of a campaign against the gas companies, and look not to the quenching element of water. Captain Liernur's pneumatic system of drawing off the sewage from dwellings was sent to the Sewers Commission last year, and there the subject yet lies.

Waste of Manufactures.—One of the most important phases of modern science is that of turning to account what had previously been considered as waste or refuse. In respect to getting raw materials, as in metal and coal mining, it is well known that what was formerly left as intractable has now become a source of wealth, simply because improved engineering and chemical processes have utilized such so-called waste. But there are numerous cases in which such utilization has yet to be arrived at, and some of them we propose here to point out, instancing, first, the question of raw material, and thence proceeding to consider the refuse of manufactures. Taking, first, our own important product—coal, we chiefly allude to the enormous waste of "slack," which in some districts in the North is still used as road ballast. Some 30 years ago we noticed that the whole of a line of railway, bordering on Durham and Northumberland, was ballasted with this slack, and the plan was only relinquished because of a serious fire occurring which destroyed a portion of the permanent way. Within the last three years, antecedent to the rise in price of coals, we have seen 4 tons of good slack in each day of 12 hours (actually 10 hours) employed to drive an engine working at 30 lbs. boiler pressure, and scarcely doing 20-horse power work. This slack, at that time, was only worth 3s. 6d. per ton (1871); since then the same fuel has been paid for at the same works at the rate of 11s. 6d. per ton. Surely, in such a case, the waste to which we have referred was shameful, yet it was only typical of several scores of works supplied with that slack from the same and adjacent collieries. Coal-washing has for some time past been most wisely resorted to in cases where that fuel has been used for making coke for smelting purposes, the object being especially intended to remove the sulphur due to the presence of pyrites (sulphide of iron). In this operation an enormous amount of copperas (sulphate of iron) is lost, which is of great value in dyeing, calico printing, and other similar operations. Besides this, an immense amount of small coal is not only wasted, but made a dangerous nuisance to the neighbourhood. As a rule, the small pieces of coal detached from the entire mass are rich in hydrocarbons, partaking frequently of the character of jet or cannel coal. In a recent journey through Warwickshire we noticed a most astonishing waste in a large amount of petroleum (or an analogous oil) being allowed to pass away with the water pumped from some coal mines. The smell was strong enough to be perceived far from the pit's mouth, and the surface of the waste water was thickly coated with oil. Yet on inquiry we found that this waste had been going on for years, and is still in "operation," for we cannot call it better, as the waste must be deliberately wilful. Through an observance of this kind of waste we are indebted to James Young for the origin of the paraffin manufactured in this kingdom as an article of commerce. Any person who has travelled, with an observant eye, over the iron districts of Great Britain, cannot have failed to notice with regret the enormous waste of raw material and fuel. In respect to the latter, it is only necessary to draw attention to the rough kind of engine work, boilers uncoated and exposed to the open air, rain, &c., as used for raising coal, and pumping the mines. It is true that in some smelting districts, especially the Cleveland and Barrow-in-Furness, much has been done in the way of economizing heat previously lost, but it is still evident that an enormous amount of waste goes on at numbers of our iron-works, and the majority of our blast-furnaces are not what they ought to be. The same remarks apply to the operation of "puddling," although for several years past attempts have been made to substitute mechanical for human labour. The slow adaptation of machinery for getting coal, and also for steam-boiler stoking, still further illustrates the waste of labour and fuel, to which may be added the general management of the gas-house in regard to charging and discharging retorts, and the use of coal and coke in place of tar as fuel, at least so far as this country is concerned.—*Engineering.*

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

1084.—Kusenberg, A., Düsseldorf, Germany, "Automatic waste-water conduit." March 24, 1875.

1116.—Nicholas, J., Hope, Flint, "An improved method of and apparatus for carbonizing coal, slack, peat, wood, bones, and other like materials, subjected to a coking process or to destructive distillation, whereby commercial products are obtained and the vapours and gases utilized." March 27, 1875.

1120.—Brown, M. H., New Cross, London, "Certain improvements in water-closets for deodorizing and disinfecting the same, applicable also for other places." March 27, 1875.

1137.—Heap, J., Oldham, "Improvements in apparatus and appliances for screwing and tapping bolts, nuts, tubes, and other articles." March 30, 1875.

1161.—Ingram, J., Oakham, Rutland, "Improvements in raising and forcing water and other liquids." March 31, 1875.

1164.—Lyall, J., Glasgow, "A new or improved tube expander." March 31, 1875.

1165.—Hallsworth, S., and Bailes, R., Leeds, "Improvements in the means employed for purifying illuminating coal gas." March 31, 1875.

1172.—Hogg, J. B., Edinburgh, "An improved gas-torch or fire-lighter." April 1, 1875.

1173.—Radford, R. H., Strand, London, "Improvements in fluid motors, power engines, and such like apparatus." April 1, 1875.

GRANTS OF PROVISIONAL PROTECTION.

994.—Hood, W. C., Battersea, London, "An apparatus for regulating the flow of liquids." March 18, 1875.

999.—Brotherhood, P., Notting Hill, London, "Improvements in apparatus for forcing or compressing fluids or liquids." March 18, 1875.

1040.—Hill, G., Liverpool, "Improvements in and applicable to gas-meters." March 22, 1875.

NOTICES TO PROCEED.

3960.—Hulme, R., and Lund, E., jun., Salford, Lancaster, "Improvements in pumps." Nov. 17, 1874.

4126.—Clark, A. M., Chancery Lane, London, "Improvements in the musical instrument known as the pyrophone." A communication. Dec. 3, 1874.

4228.—Muller, J. A., Amsterdam, "Improvements in apparatus for measuring water or other liquids, applicable also as a current meter or motor." Dec. 9, 1874.

477.—Schrebler, G., Guben, Prussia, "Improvements in the construction of pistons for rotary engines and pumps, and in parts connected therewith." Feb. 9, 1875.

775.—Gooch, Sir F. S., Bart., Grosvenor Square, London, "Improvements in regulating the flow of liquids in apparatus employed for reducing such liquids from a higher to a lower temperature." March 3, 1875.

797.—Elborough, C. M., King's Arms Yard, London, "An improved meter for liquids." A communication. March 4, 1875.

PATENTS WHICH HAVE PASSED THE GREAT SEAL.

3287.—Furness, G., Heaton Norris, Lancaster, "Improvements in the construction of cocks and valves for controlling the flow of liquids and fluids." Sept. 25, 1874.

3304.—White, M. G., Landport, Hants, "Improvements in self-acting apparatus for regulating the supply of water or other liquids." Sept. 26, 1874.

3404.—Trotter, H., North Shields, "An improved self-lighting and extinguishing apparatus." Oct. 6, 1875.

3455.—Westerby, T. W., New Wortley, Leeds, "Improvements in pressure and vacuum gauges." Oct. 9, 1874.

3464.—Parkes, S. H., Birmingham, "Improvements in gas and other lamps." Oct. 9, 1874.

3469.—Körting, E., Hanover, Germany, "Improvements in the method of and apparatus for revivifying the materials or agents employed for purifying gas used for lighting and heating purposes." Oct. 9, 1874.

3471.—Körting, E., Hanover, Germany, "Improvements in the mode of and apparatus for compressing and rarefying fluids applicable for forcing, driving, or drawing gases through liquids or other matters, and also for filtering and for other useful purposes." Oct. 9, 1874.

135.—Scott, H. Y. D., Ealing, London, "Improvements in the purification of coal gas." Jan. 13, 1875.

156.—Johnson, S. H., Stratford, London, "Improvements in cocks or valves." Jan. 14, 1875.

268.—Gill, D., Weston-super-Mare, "An improved method for neutralizing the poisonous and offensive nature of sewer or drain gas, and to deodorize the sewage." Jan. 23, 1875.

323.—Davey, H., Leeds, "Improvements in pumping apparatus worked by hydraulic pressure." Jan. 28, 1875.

399.—Rydill, G., Chancery Lane, London, "Improvements in the process of and apparatus for treating and purifying sewage and polluted waters, which improvements are applicable for collecting the soap, grease, and oils for the manufacture of gas, and for removing incrustation in steam-boilers." Feb. 3, 1875.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

776.—Somerville, J., "Improvements in gas retort-lids and mouthpieces, and machinery for luting the same." March 14, 1872.

783.—Lake, W. R., "An improved electric torch for lighting gas." March 14, 1872.

The GRAND MEDAL of MERIT at the VIENNA EXHIBITION has been AWARDED to

GWYNNE & BEALE'S PATENT IMPROVED GAS-EXHAUSTERS,

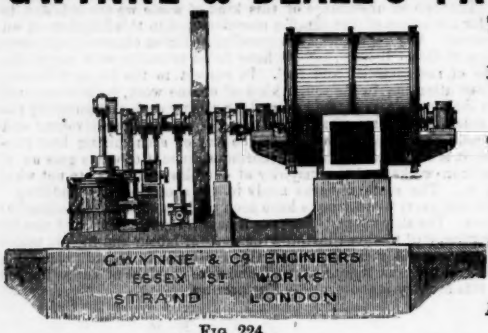


FIG. 224.

The BEST EXHAUSTERS IN THE WORLD.

Made under the personal superintendence of

Mr. BEALE,

The oldest Maker, Inventor and Patentee of

GAS-EXHAUSTING MACHINERY.

(It is NOT CORRECT to state that Mr. BEALE has RETIRED.)

Prices and every information on application.

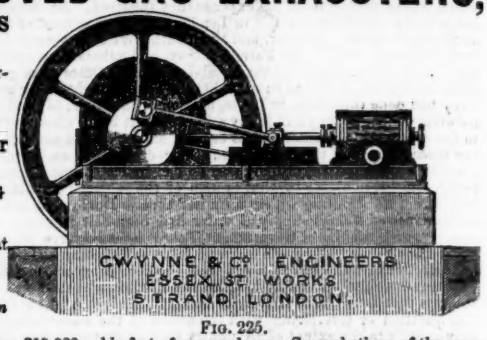


FIG. 225.

Fig. 224 represents one of those erected at the Imperial Gas-Works, Bromley, capable of passing 210,000 cubic feet of gas per hour. Several others of the same size are now on order for the same Company. These Patent Machines combine the highest quality of workmanship and materials, the largest bearings and wearing surfaces, with the **most perfect system of action yet discovered.** Fig. 225 represents one of a series of four at the Nottingham Gas-Works, each passing 52,500 cubic feet per hour. GWYNNE AND Co. *do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, but to produce Machinery of the very highest quality, and the most approved design and arrangement.* Their prices have been estimated with a due regard to the **excellence of the article produced,** and when this is taken into consideration, they have no fear for the result. The orders executed this season for Exhausters and alterations to their patented system amount to over 4,000,000 cubic feet of gas passed per hour, and to over 300 horse power for Engines to drive them. In every instance their work is giving the greatest satisfaction. Numerous testimonials and references can be given.

REGULATORS, BYE-PASSES, STOP-VALVES, GAS-VALVES, & MACHINERY FOR GAS MANUFACTURE, OF ALL SIZES,
CAN BE HAD ON APPLICATION TO
GWYNNE & CO., HYDRAULIC & GAS ENGINEERS, ESSEX STREET WORKS, STRAND, LONDON, W.C.

G. & Co. are now manufacturing for a London Gas Company three of their 210,000 cubic feet Patent Gas Exhausters, and many of all sizes.

WANTED, in a provincial Gas-Work, within 35 miles of London, a trustworthy young MAN, capable of surveying meters, collecting accounts, and assisting in the office.
Address No. 149, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a Situation as Manager of Gas-Works, making about 5,000,000 or 6,000,000. The Advertiser is a first-class retort-setter; also experienced in main and service laying, fixing meters, gas-fitting, &c. Good testimonials.
Address No. 148, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, the MANAGEMENT of a small country Gas-Work. Ten years experience. Can produce good testimonials as to character and ability, and can work iron or clay retorts, lay mains, services, &c. Aged 34.
Address Mr. WALTER RHOADES, Gas-Works, Burnopfield, Lintz Green, DURHAM.

TO GAS MANAGERS.

WANTED, by the Bingley Improvement Commissioners, a thoroughly competent and practical MANAGER for their Gas-Works. Annual make upwards of 30 million feet.
State age, and salary required, and post application and testimonials, by April 15, to J. N. THACKER, Clerk.
Bingley, March 25.

WANTED, an engagement as Manager, or Manager and Collector, of Gas-Works, where the make is about 20 million. Thoroughly efficient. Highest testimonials and references from present and previous employers.
Address, in first instance, to No. 140, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Henley Gaslight and Coke Company, Limited, a thoroughly competent person as WORKING MANAGER. Annual make about 7 million. Must be experienced in main and service laying, fixing meters, &c., and in the setting and working of clay retorts with an exhauster.
Apply, by letter, to Mr. W. S. HEWS, HENLEY-ON-THAMES.

TO FOREMAN STOKERS.

WANTED, by a large provincial Gas Company, Two Foreman STOKERS. Wages about £2 per week. Only those who have held a similar situation need apply. Applicants must state age and previous experience.
Address, with testimonials and references, to No. 150, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

CONTRACT FOR CANNEL COAL.

WANTED, Parties to Contract for the supply of CANNEL COAL, for the season 1875-6, to the Corporation Gas-Works, Forfar.
Sealed offers to be sent to the MANAGER at the works, on or before the 20th of April. The annual quantity carbonized is about 2000 tons.
The Advertisers retain power to regulate delivery.
Forfar, March 26, 1875.

NEW EDITION, NOW READY,
ADVANTAGES OF GAS FOR COOKING AND HEATING.
By MAGNUS OHREN, A.I.C.E., F.C.S.
For Companies to issue to their Gas Consumers.

Specimen Copy by post Threepence, direct from MAGNUS OHREN, Gas-Works, Lower Sydenham, London, S.E.

THE ANALYSIS OF COAL GAS.—Mr. A. L. Sparkes, B.A., F.C.S. (Gas Examiner at Hanley, Stoke-Fenton, and Newcastle), gives Private Lessons in Photometry and Gas Testing.
Terms on application at Snow Hill Cottage, Shelton, STOKE-ON-TRENT.

THOMAS ALLAN & SONS, of Springbank Iron-Works, Glasgow, manufacture small cast-iron GAS AND WATER PIPES, 1½ to 6 inches, at their branch works, Stockton-on-Tees, and have at present a large stock, which they are open to sell at moderate prices.

MESSRS. JOHN BETHELL & CO.,

(ESTABLISHED 1836,)

CONTRACTORS for GAS TAR,

MAKERS OF ANTHRACENE, CREOSOTE, &c.,

CLAYTON CHEMICAL WORKS, MANCHESTER;
SWAN VILLAGE, WEST BROMWICH.
Head Offices: 38, KING WILLIAM STREET, LONDON BRIDGE.

ALFRED WILLIAMS,

PHŒNIX FIRE-BRICK WHARF,

64, BANKSIDE, SOUTHWARK, LONDON, S.E.

GAS ENGINEER AND CONTRACTOR FOR THE ERECTION OF GAS-WORKS,
AND FOR THE
SUPPLY OF RETORTS, FIRE-BRICKS, CAST-IRON MAINS,
AND ALL MATERIALS FOR GAS MANUFACTURE AND DISTRIBUTION.

GEORGE ORME & CO.,

GAS METER MANUFACTURERS, BRASSFOUNDERS & FINISHERS,

ATLAS METER-WORKS, OLDHAM.

CONSUMERS WET & DRY GAS-METERS ON THE MOST APPROVED PRINCIPLES.
STATION-METERS, GOVERNORS, PRESSURE-REGISTERS,
And every Description of Gas Apparatus.
GAS, STEAM, AND WATER FITTINGS.

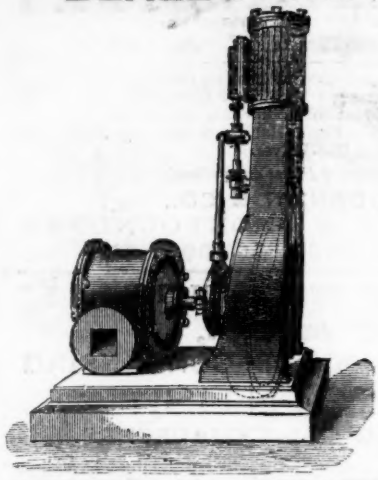
JAMES MILNE & SON,

GAS ENGINEERS,

Gas-Meter, Gas Apparatus, and Gas-Fittings Manufacturers,
EDINBURGH, AND
2, KING EDWARD STREET,
NEWGATE STREET, LONDON.
Meter Works in London—2, CROSS STREET, WILDERNESS ROW, E.C.

STATION-METERS, GOVERNORS, CONSUMERS METERS, GAS LUSTRES,
CHANDELIERS, BRACKETS, &c.,
And every description of Gas-Fittings and Gas Apparatus.

BEALE'S IMPROVED PATENT GAS-EXHAUSTER

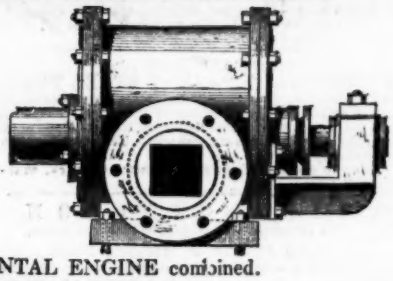


WITH

ENGINE COMBINED

ON

ONE BASE PLATE.



SOLE MAKERS,

GEORGE WALLER & CO.,

Who, since Mr. BEALE'S retirement, are the Oldest Makers.

EXHAUSTERS with HORIZONTAL ENGINE combined.
EXHAUSTERS with OUTSIDE BEARINGS.
MAKERS of ENGINES, BOILERS, and GAS MACHINERY.
TAR, LIQUOR, and SYPHON PUMPS. GAS-VALVES in stock, 2 to 30 inches.
SELF-ACTING BYE-PASS VALVES, with Lid and Relieving Lever.
MANN'S and many other descriptions of WATER DISTRIBUTORS.
SCRUBBERS, PURIFIERS, and CONDENSERS.
EXHAUSTERS from 3000 to 60,000, new and second hand, in stock.

PHŒNIX ENGINEERING WORKS, HOLLAND STREET, S.E., & at STROUD, GLOUCESTERSHIRE.

ADVERTISER, aged 29, married, seeks an ENGAGEMENT in any position of trust. Has had eight years experience (gas and fitting) in the offices of a Gas Company. First-class references.

Address X., 4, Hundleby Place, Edwardes Street, Mosely Road, BIRMINGHAM.

PURIFIERS FOR SALE.

THE Cardiff Gaslight and Coke Company have for SALE four 12 feet square PURIFIERS, complete with wood sieves, wrought-iron covers, and convenient gear for raising; also faced centrevalve, with 15-in. connexion-pipes, all in thorough good condition.

May be seen at the works, or further particulars upon application.

HENRY BOWEN, Engineer.

Gas Offices, Cardiff, March 24, 1875.

TO PIPE-FOUNDERS.

THE Directors of the Dysynni Gas Company, Limited, invite TENDERS for the supply of about 5000 yards of 3-inch Cast-Iron PIPES. A specification may be obtained from the undersigned on receipt of 2s. 6d.

The Directors do not bind themselves to accept any tender.

Offers to be delivered on or before the 17th inst., addressed to F. J. COLLINGWOOD, Civil Engineer, RHYL.

April 2, 1875.

TO CONTRACTORS.

TENDERS are invited for the enlargement of the Malpas Gas-Works, by the erection of a new Bench of Eight RETORTS, with hydraulic and connexions, two new Purifiers and Valves, one new Gasholder and Tank, and other alterations, according to the plans and specifications, which may be seen at the Company's Office.

Tenders to be sent to the SECRETARY of the Malpas Gas Company, Limited, Malpas, CHESHIRE, not later than the 19th of April, 1875.

TO TAR DISTILLERS, &c.

THE Directors of the Northampton Gas-light Company are prepared to receive TENDERS for the TAR and AMMONIACAL LIQUOR produced at their works for One year from the 30th of June next.

The Tar, &c., can be loaded direct into boats or railway tank waggons at the works.

Tenders, at per 100 gallons for the Tar, and also for the Ammoniacal Liquor, to be delivered at the Company's Office, Northampton, on or before Tuesday, April 20.

The Directors do not pledge themselves to accept the highest or any tender.

JOHN EUNSON, jun., Engineer.

Northampton, March 22, 1875.

TO CONTRACTORS.

THE Directors of the Folkestone Gas and Coke Company are prepared to receive TENDERS for the construction of a GASHOLDER-TANK, 83 ft. in diameter, at their Gas-Works, at Folkestone.

Drawings and specifications may be inspected, and forms of tender and schedules of quantities may be obtained, at the Offices of the Company, at Folkestone, and at the Office of Messrs. Thomas and Charles Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W., on and after Monday, the 5th day of April next, and tenders must be delivered at the Offices of the Company, at or before Ten o'clock in the forenoon, on Monday, the 19th of April next.

The Company do not pledge themselves to accept the lowest or other tender.—By order,

WILLIAM MEDHURST, Jun., Secretary.

Folkestone, March 31, 1875.

TO GASHOLDER MAKERS.

THE Directors of the Folkestone Gas and Coke Company are prepared to receive TENDERS for the construction and erection at their Gas-Works, at Folkestone, of a Telescopic GASHOLDER, 80 ft. in diameter.

Drawings may be inspected, and specifications and forms of tender may be obtained, at the Offices of the Company at Folkestone, and at the Office of Messrs. Thomas and Charles Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W., on and after Monday, the 5th day of April next, and tenders must be delivered at the Offices of the Company at or before Ten o'clock in the forenoon on Monday, the 19th day of April next.

The Company do not pledge themselves to accept the lowest or other tender.—By order,

WILLIAM MEDHURST, Jun., Secretary.

Folkestone, March 31, 1875.

IN CHANCERY.

In the Matter of the Companies Acts, 1862 and 1867, and in the Matter of the Coal Economizing Gas Company, Limited.

THE Creditors of the above-named Company are required, on or before the 6th day of May, 1875, to send their Names and Addresses, and the particulars of their DEBTS or CLAIMS, and the Names and Addresses of their Solicitors, if any, to Mr. Charles Robert Tennant, of No. 8, Walbrook, in the City of London, the Liquidator of the said Company; and if so required by notice in writing from the said Liquidator, are by their Solicitors to come in and prove their said Debts or Claims, at the Chambers of the Vice-Chancellor Sir Charles Hall, at No. 14, Chancery Lane, in the county of Middlesex, at such time as shall be specified in such notice, or in default thereof they will be excluded from the benefit of any distribution made before such Debts are proved. Thursday the 27th day of May, 1875, at twelve o'clock at noon, at the said Chambers, is appointed for hearing and adjudicating upon the Debts and Claims.

Dated this 25th day of March, 1875.

WILLIAM BINNS SMITH, Chief Clerk.

Wilkins and Blyth, 10, St. Swithin's Lane, London, Solicitors for the said Official Liquidator.

INVITATION FOR TENDERS FOR COALS.

THE Directors of the Farnham Gas Company are prepared to receive TENDERS from persons willing to supply and deliver, free of all charges, at Farnham Station, London and South-Western Railway, 1200 tons of the best New Pelton GAS COALS, at the times and in the quantities stated below.

CONTRACT No. 1.—600 tons, to be delivered in quantities of 50 tons (at intervals of seven days), before the 26th day of August next, the first quantity to be delivered within 14 days of acceptance of contract.

CONTRACT No. 2.—600 tons, to be delivered in quantities of 50 tons (at intervals of six days) between the 20th of October and the 31st of December next.

The Coals to be consigned to the order of the Farnham Gas Company, at Farnham Railway Station.

The Meter's certificate of each quantity to be duly sent with invoice of same.

Payment one month after delivery of each 100 tons.

Sealed tenders for each quantity, marked "Tenders for Coals," to be delivered to the Secretary, W. WELLS, 112, West Street, Farnham, SURREY, not later than Six o'clock p.m., on Tuesday, the 13th of April inst.

The Directors reserve the power to accept one person's tender for the first 600 tons, and another person's for the last 600 tons, and the right to reject the lowest or any tender.

April 2, 1875.

TO GAS-METER MAKERS AND OTHERS.

A. BAILEY, 86, Crampton Street, Newington Butts, London, S.E., Machinist and Manufacturer of every description of Gas-Meter, Station, and other Indexes, Indicators, Tell-Tales for Turnstiles, &c.

All kinds of Worm and Wheel Cutting.

COST PRICE SHEETS.

MANUFACTURE AND DISTRIBUTION OF GAS. These sheets are the same as were laid before the Dublin Meeting of the British Association of Gas Managers; but in the REPRINT, NOTES have been added for the guidance of those using them. Copies of the two sheets may now be had, price 5s.

South Shields. W. J. WARNER.

BAILEY'S Patented Inventions are now in extensive use wherever steam is known. Bailey's Patent Steam Gauges, Pyrometers, Water Gauge Cocks, Test Pumps, Fusible Plugs, Steam and Water Valves, Safety Valves, Junction Valves, Pumps, Tell-Tales, Recorders, Lightning Conductors, Electric Telegraphs, Turret Clocks, Steam Joint Cement, Lifting Jacks, Boiler Feeders, Lime Catcher and Separator, Injectors and Ejectors, and every description of first-class Brass Work for Engines and Boilers. Gas-Works Managers who have not our large book should send for it.

16th edition, 1000 engravings, 4to., post free 2s. in stamps, weight 10 oz., cost of production £1000.

BAILEY'S Illustrated Inventions, containing details and prices of goods in our five several departments:—(1) Brass Foundry, Steam Gauges, Indicators, Feeders, and Fittings; (2) Engineers Sundries, Small Tools, and Stores; (3) Machine Pump and Fire Engine: (4) Turret Clock, &c.; (5) Electric Telegraph, A B C Instruments, Bells, and Apparatus.

J. BAILEY and Co., Albion Works, Salford, LANCASHIRE.

WEST KENT GAS COMPANY.

FOR SALE—348 Iron-Cased Meters, "Cathels and Splats"—viz., 57 3-light, 299 5-light, 50 10-light, 11 20-light, one 30-light.

Can be seen on application to the Manager, at the works at Erith.

Tenders to be sent to the Secretary, R. P. KEYS, 237, SOUTHWARK BRIDGE ROAD, S.E.

BOROUGH OF DARLINGTON.

TO ENGINEERS.

THE Darlington Corporation invite TENDERS for the supply, fixing, and completing all connexions and pipes for a new Bench of 120 RETORTS, with wrought-iron Hydraulic Mains, Condensers, Washers, Purifiers, &c., at their Gas-Works.

Drawings and specifications may be seen on application to the Manager, at the Gas-Works.

Sealed tenders, endorsed "Tender for Gas Apparatus," to be sent to me not later than Monday, the 19th day of April inst.

By order,

HUGH DUNN, Town-Clerk.

Darlington, April 1, 1875.

ROCHDALE CORPORATION GAS-WORKS.

TO IRONFOUNDERS.

THE Gas Committee invite Tenders for the supply of ordinary Socket and Spigot GAS-PIPES of the following dimensions, with turned and bored joints, cast vertically in lengths of 9 ft. each, exclusive of socket:—750 yards, 10 in. in diameter, each length not to weigh more than 4 cwt. 2 qrs., or less than 4 cwt. 1 qr. Any excess in weight will not be paid for. A recess or groove to be made in the sockets for a lead joint, if necessary.

The whole to be coated by Dr. Smith's process, except the turned and bored parts, which are to be thickly coated with tallow and white lead, and each pipe required to stand a pressure of 100 lbs. to the square inch, to be tested in the presence of a servant of the Gas Committee.

Parties tendering must be prepared to enter into an agreement binding them to deliver the whole on the road between Meanwood Brow and Passmonds within six weeks from receipt of order, in such quantities and places as required by the Engineer.

Tenders to be sent to me on or before the 13th of April, endorsed "Tender for Gas-Pipes."

The Committee do not bind themselves to accept the lowest or any tender.

By order,

ZACH. MELLOR, Town-Clerk.

Town-Hall, Rochdale, April 2, 1875.

Mr. NORWOOD EARLE,

GAS SURVEYOR,

12, QUEEN VICTORIA STREET, E.C.,

Advises on all matters connected with the Distribution of Gas, Public Lighting, Gas Testing, &c.

Valuations made for Assessment and other Purposes.

Mr. HENRY GORE,

CONSULTING GAS ENGINEER,

9, ISLIP STREET, KENTISH TOWN, LONDON, N.W.,

May be consulted on all matters relating to the Manufacture and Distribution of Gas, including Inspection and Reports on Works, Foreign Concessions, Patented or other Processes.

Mr. ALFRED LASS,

60, CORNHILL, LONDON, E.C.,

Is prepared to open the Books, and, if necessary, keep the Accounts of Gas and Water Companies.

To examine the Books and Accounts, and prepare Balance-Sheets for the information of Directors.

To assist Secretaries in preparing Balance-Sheets, according to the "Gas-Works Clauses Act, 1871;" or may be consulted with respect to Accounts generally.

WM. RICHARDS,

INVENTOR OF THE DRY GAS-METER,

REVISER OF "HUGHES ON GAS-WORKS,"

CONSULTING GAS ENGINEER,

Advises on all matters of business connected with Gas Lighting. Furnishes Working Drawings of Retort-Settings, Specification of Works, complete or in detail.

11, ST. MICHAEL'S ROAD, STOCKWELL, LONDON, S.W.

BRONNER'S PATENT GAS-BURNERS give 99 per cent. of light, as compared with 27 per cent. given by ordinary burners, with equal consumption of gas.—*Vide* "Gas Referees Report," published June, 1869.
HENRY GREENE AND SON, Sole Consignees of Brönner's Patent Improvements in Gas Lighting, 16 and 17, King William Street, LONDON, E.C.

WATER-MAINS.

COTTERILL'S PATENT STEEL TUBE-DRILLS, for connecting services to water-mains, *under pressure*, without turning off the water. They drill and tap themselves, and are left in the mains. Made of all sizes, from ¾ to 2 inches and upwards. They cost less than the ordinary plan.
Apply to CHARLES FORSTER COTTERILL, Cannock, STAFFORD. Patentee.

OXIDE OF IRON.—We are prepared to supply, on moderate terms,
HYDRATED PEROXIDE OF IRON (BOG OCHRE),
Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
FRANCIS RITCHIE & SONS,
BELFAST.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET,
DURHAM.
Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-Iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
Agent in London, Mr. J. MANWARING, 101 Cannon Street E.C.

GARSIDE'S IMPROVED REGISTERED TUBE-VICE, holds all sizes of Wrought-Iron and Brass Tubes, from a 2-in. socket to the smallest brass tube made.

GARSIDES IMPROVED MAIN DRILLING CLIP, made in two sizes, to drill from 2-in. to 6-in. Mains, and from 6-in. to 12-in. Mains.
The above tools are made light and handy.
For drawings, &c., apply to the maker, SAMUEL GARSIDE, Gatefield Iron-Works, ASHTON-UNDER-LYNE.

JAMES OAKES & CO.,
ALFRETON IRON-WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20 & 22, WHARF ROAD CITY ROAD, LONDON, N.,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-Iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention. CHARLES HORSLEY, Agent.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of
CLAY RETORTS, FIRE-BRICKS, AND EVERY DESCRIPTION OF FIRE-CLAY GOODS

PRICE'S PATENT COKE & COAL BARROW.

effecting a great saving of time, labour, and expense.
For particulars, price, &c., apply to Mr. E. PRICE, Inventor and Patentee, Gas-Works, Hampton Wick, MIDDLESEX.

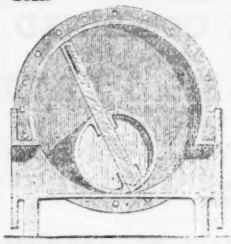
HOPKINS, GILKES, & CO.,
LIMITED,
MIDDLESBOROUGH,
SUPPLY GAS & WATER PIPES of EVERY SIZE.
Plain, Turned and Bored, and Coated.
CAST-IRON RETORTS.
Castings for Gas-Works of every description.
EXHAUSTERS.
LONDON OFFICE: 25, LAURENCE POUNTNEY LANE.

MOBBERLEY & PERRY,
THE HURST
FIRE CLAY and BRICK WORKS,
STOURBRIDGE.

Proprietors of
BEST GLASS-HOUSE POT and CRUCIBLE CLAY.
Manufacturers for Home and Export.
GAS-RETORTS, GLASS-HOUSE FURNACE,
BLAST-FURNACE, & TANK BRICKS, LUMPS, TILES,
And Every Description of Best Fire-Bricks.

C. & W. WALKER,
MIDLAND IRON-WORKS,
DONNINGTON, NEAR NEWPORT, SHROPSHIRE,
MANUFACTURERS OF
TELESCOPIC AND SINGLE-LIFT
GASHOLDERS,
CAST & WROUGHT IRON GASHOLDER-TANKS,
CONDENSERS, SCRUBBERS, & PURIFIERS.
LONDON: 8, FINSBURY CIRCUS, E.C.

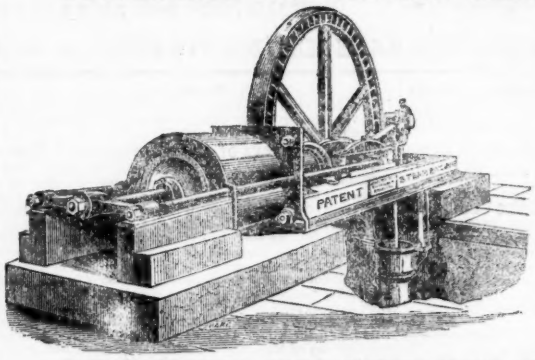
J. BEALE'S PATENT GAS EXHAUSTER.



BEALE'S CONTINUOUSLY ACTING
GAS EXHAUSTERS
ARE NOW MANUFACTURED BY
B. DONKIN & CO.

MR. J. BEALE, of East Greenwich, having retired from business, has made an arrangement with B. DONKIN & CO. for the sole manufacture of his Patent Solid-Slide Gas Exhausters.
B. D. & Co. also make Steam-Engines to drive Gas Exhausters direct or otherwise, and Gas-Valves.
Estimates and Prices on application to
B. DONKIN & CO.,
ENGINEERS & IRONFOUNDERS,
BERMONDSEY, LONDON, S.E.

ECONOMY OF FUEL IN STEAM-ENGINES.
B. DONKIN & CO.,
PATENT HORIZONTAL COMPOUND CONDENSING
STEAM-ENGINES,
APPLICABLE FOR DRIVING GAS-EXHAUSTERS.



These Engines have been at work a sufficient number of years to prove their durability and efficiency.

One of them has been subjected to a scientific and exhaustive trial to test the consumption of fuel, with the result that an expenditure of less than **2 lbs.** of coal per hour developed one indicated horse power.

Full Details of this Trial, and Prices, sent on application to
B. DONKIN & CO., BLUE ANCHOR ROAD, BERMONDSEY, S.E.

KÖRTING BROTHERS,
SOLE LICENSEES FOR
W. CLELAND'S PATENT STEAM-JET GAS-EXHAUSTER.
E. KÖRTING'S PATENT STEAM-JET GAS-EXHAUSTER.
SMALL COST—COMPACTNESS—PERFECTLY SELF-ACTING—SELF-REGULATING—SELF-CLEANSING—SMALLEST BOILER PRESSURE SUFFICIENT—NO STEAM-ENGINE—NO GEARING—NO ATTENTION—NO EXTRA ROOM REQUIRED—NO TEAR AND WEAR—NO NOISE—NO OSCILLATION IN VACUUM, OR BACK PRESSURE.
UPWARDS of 100 in USE in CONTINENTAL GAS-WORKS.
IN ENGLAND, SUPPLIED TO—
The Gaslight and Coke (Chartered) Company's Works, London.
The Liverpool United Gaslight Company's Works, Linacre.
Cornholme District Gas-Works, near Todmorden.
These Gas-Exhausters are kept in stock in 16 different sizes, delivering from 500 cubic feet to 60,000 cubic feet of Gas per Hour, at
KÖRTING BROTHERS,
STEAM-JET ENGINEERS, 7, LANCASTER AVENUE, MANCHESTER.

LIME SUPERSEDED
IN THE
PURIFICATION OF ILLUMINATING GAS
BY
SPENCE'S PATENT DRY COPPERAS.

The only purifying material which removes by one process, without injury to the purifiers, all Ammonia and Sulphuretted Hydrogen. It has been in use for upwards of five years at some of the largest Gas-Works in the Kingdom.

TESTIMONIALS SENT ON APPLICATION TO
SPENCE BROTHERS CHEMICAL COMPANY, LIMITED,
VICTORIA CHEMICAL WORKS, BRADFORD, MANCHESTER;
SOLE MANUFACTURERS OF SPENCE'S PATENT DRY COPPERAS,
SPENCE'S PATENT GAS DEODORIZER, AND MUDIE'S DISINFECTANT;
MANUFACTURERS OF
SULPHATE OF AMMONIA, VITRIOL, COPPERAS, &c.;
PURCHASERS OF SPENT OXIDE AND AMMONIACAL LIQUOR, AND CONTRACTORS FOR THE PURIFICATION OF COAL GAS.

NOTICE OF REMOVAL.

CAFFALL, THOMAS, & CO., LIMITED,

MANUFACTURERS OF THE

PATENT MOVEABLE SEAL

FOR DIP-PIPES,

Have REMOVED from 28, GRACECHURCH STREET, to

City Office: 75, FLEET STREET, E.C.

Works: 8, MEDWAY BUILDINGS, ROMAN RD., OLD FORD, E.,

Where Models may be seen and every information obtained from

W. D. CHILD, Manager.

THOMAS CARR & SON,

MANUFACTURERS OF

FIRE-BRICKS, LUMPS, TILES, RETORTS, &c., &c.,

SCOTSWOOD FIRE-BRICK WORKS,

NEAR

BLAYDON-ON-TYNE.

THOMAS LAMBERT & SONS

MANUFACTURE EVERY DESCRIPTION OF

GAS AND WATER FITTINGS;

ALSO,

WROUGHT-IRON TUBES & FITTINGS.

SHORT STREET, LAMBETH, LONDON.

INTERNATIONAL EXHIBITION, 1862.

CLASS X.

PRIZE MEDAL

For excellence of Fire-Clay Gas Retorts, and "HONOURABLE MENTION" for good quality of Fire-Bricks.

WILLIAM STEPHENSON & SONS,

THROCKLEY,

NEWCASTLE-ON-TYNE.

1862.

PATENT ANTIMONY PAINT.

MADE ONLY BY

GEORGE HALLETT & CO.,

296, ROTHERHITHE, LONDON, S.E.

CLASS II.

This Paint having been in general use over thirteen years (especially in some of the principal Gas-Works), and proved itself the best light-coloured Paint produced for resisting the influence of vitiated atmospheres, it is important that its qualities should be more widely known.

It is not discoloured like white lead in a sulphuretted atmosphere, nor washed off like white zinc; and its light colour reflecting heat, produces much less expansion of gas in holders painted with it than with dark colours, besides rendering them much more sightly. Its specific gravity is so much below white lead that the same weight will cover one-third more surface, while it is equal in body; and its price being about the same (30s. per cwt.), it is actually one-third cheaper. From experience, its manufacture is greatly improved, and it is quite suitable for all purposes in which white lead is employed.

The following Gas Companies in London have used the Paint for years—viz., The Gaslight and Coke, Imperial, Independent, City of London, Commercial, London, and Surrey Consumers.

N.B.—Antimony Paint, COVERING SO MUCH MORE WORK, costs about 20s. per cwt., as compared with White Lead at 30s. per cwt.; a similar economy arises from its use in Steam and Gas Joints, for which purpose it is superior to White Lead.

SPECIAL DRIERS FOR ANTIMONY PAINT SUPPLIED.

ALDER AND MACKAY,

GRANGE WORKS, EDINBURGH,

MANUFACTURERS OF

CONSUMERS IMPROVED GAS-METERS;

IMPROVED DRY GAS-METERS, in Cast Iron and Tin Cases,

OF THE HIGHEST EXCELLENCE,

Warranted to measure correctly, and not to vary.

STATION METERS AND GOVERNORS,

EXPERIMENTAL METERS, PHOTOMETERS, GASHOLDERS, &c.

HODGE & CO.'S

IMPROVED VENTILATING SUN-LIGHTS

WITH TALC REFLECTORS AND SELF-ACTING VALVES

TO PREVENT DOWN-DRAUGHT;

VENTILATING GLOBE LIGHTS for DINING-ROOMS, LIBRARIES, &c.

Ormolu, Bronze, & Crystal Gaseliers;

MEDIÆVAL CHURCH WORK AND CORONÆ

COCKS, VALVES, and FITTINGS for GAS, STEAM, and WATER;

COLUMNS, BRACKETS, & STREET LANTERNS;

BLACK AND GALVANIZED BARREL COMPO AND TIN PIPE.

GAS ENGINEERS,

100, HATTON GARDEN, LONDON.

Drawings and Prices upon application.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, GHENT.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.

Communications addressed to J. SUGG & CO., GHENT, will receive immediate attention.

FIRE-CLAY RETORTS.

WILLIAM FRASER,

INVERKEITHING,

Owner of the Works at which Fire-Clay Retorts were first made), can supply

RETORTS, FIRE-BRICKS, &c.,

to any extent.

References can be given to managers of above a hundred Gas-Works whom he supplies.

He ships at Charlestown his CELEBRATED HALBEATH STEAM COALS, on Navy List.

JAMES NEWTON & SONS,

(Established 1820,)

FIRE-BRICK AND TILE MERCHANTS,

Wholesale and for Exportation,

FALCON DOCK, 78 AND 79, BANKSIDE,

SOUTHWARK, LONDON, S.E.,

DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for

GAS AND WATER WORKS.

EMILY GIBBONS,

Dibdale Fire-Clay Works & Colliery,

Near STOURBRIDGE.

(ESTABLISHED 1834.)

MANUFACTURER OF EVERY DESCRIPTION OF

Burs, Lumps, Stays, Shields, Blast Furnace and other Bricks & GAS-RETORTS.

Red and Blue Clay Goods, Engineering and other Ironwork, and Fittings supplied.

N.B.—Above works having been recently enlarged, orders of any magnitude for HOME or EXPORT Trade will receive immediate attention.

LEATHER DRIVING BANDS,

Hose-Pipes and Fire-Buckets, Canvas Hose, Sponge Cloths, Cotton Waste, &c.

India-Rubber Belting, Hose, Valves, Packing, &c.

Contractors to Her Majesty's Government, Railways, &c.

Price Lists on application.

STOKERS MITTS FOR GAS COMPANIES.

WILLIAM GOODWIN AND CO.,

MANUFACTURERS,

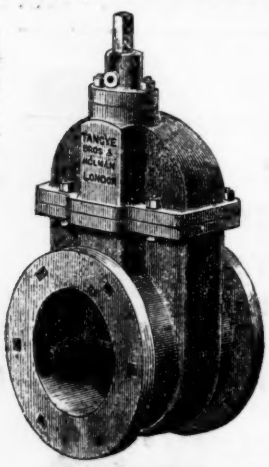
CURRIERS, AND LEATHER MERCHANTS,

36, PRIMROSE STREET, BISHOPSGATE,

LONDON, E.C.

IMPROVED

GAS-VALVES,



AT GREATLY

REDUCED

PRICES.

Inch.	s.	d.
2½	24	0
3	27	0
4	36	0
5	45	0
6	54	0
7	63	0
8	80	0
9	90	0
10	100	0
12	135	0
14	180	0

TANGYE BROS. & HOLMAN,

LAURENCE POUNTNEY LANE,

LONDON.

TO GAS COMPANIES AND THE TRADE.

J. DEFRIES & SONS,

MANUFACTURERS OF

CRYSTAL, BRONZED, & ORMOLU CHANDELIERS, IMPROVED CRYSTAL STAR & SUN LIGHTS, VESTIBULE LAMPS, AND THE PATENT CRYSTAL ILLUMINATION.

A LARGE STOCK ALWAYS IN HAND OF

IRON, BRASS, COMPOSITE, AND LEAD TUBES, FOR GAS AND WATER,

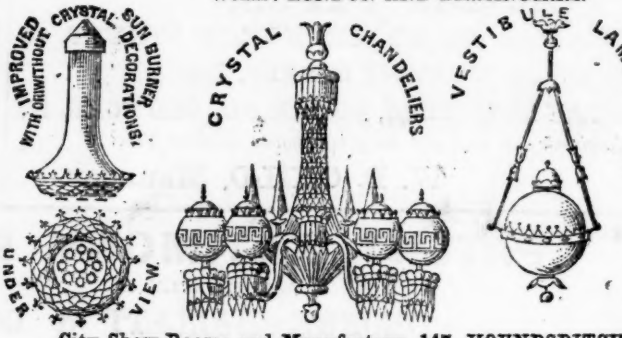
AND EVERY DESCRIPTION OF

GAS AND WATER FITTINGS.

THE PATENT DRY AND WET METER, WITH THE LATEST IMPROVEMENTS.

STREET LAMPS AND COLUMNS IN GREAT VARIETY.

WORKS: LONDON AND BIRMINGHAM.



GAS MOONS,

Cut and Engraved, of the newest designs

GAS REFLECTORS

In Silver and Glass

GAS NIBS

AND

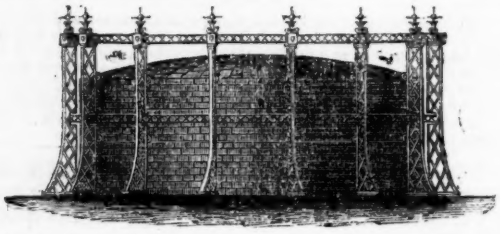
BURNERS

Of every description.

Pattern-Books of Gas-Fittings, Crystal and Ormolu Chandeliers for 1873, are now complete.

City Show-Rooms and Manufactory, 147, HOUNDSDITCH, LONDON.

ESTABLISHED 1830.



THE HORSELEY COMPANY,

LIMITED,

TIPTON, STAFFORDSHIRE.

LONDON OFFICE:

6, WESTMINSTER CHAMBERS, VICTORIA STREET,

GAS ENGINEERS, IRONFOUNDERS, &c.,

MANUFACTURERS OF

GASHOLDERS, WROUGHT AND CAST IRON TANKS, CONDENSERS, PURIFIERS, SCRUBBERS, MAINS, RETORT-LIDS, PLAIN AND DISHED, LAMP-POSTS, PIPES,

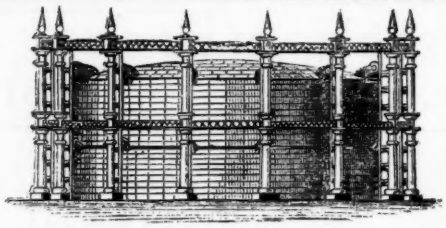
AND ALL REQUISITES FOR EITHER

GAS OR WATER WORKS;

ALSO

MAKERS OF ROOFS, BRIDGES, &c.

HOPE IRON WORKS,



STOCKTON ON TEES.

ASHMORE & WHILE,

GAS ENGINEERS & CONTRACTORS,

MANUFACTURERS OF GASHOLDERS,

GAS APPARATUS OF EVERY DESCRIPTION,

Including Improved

Retort-Lids, Boilers, Cast and Wrought Iron Tanks, Iron Roofing, Bridges, Girders,

And GENERAL IRONWORK.

N.B.—Estimates for all Gas Plant and Remodelling supplied on application.

J. & J. BRADDOCK,

GAS ENGINEERS,

GLOBE METER-WORKS, OLDHAM,

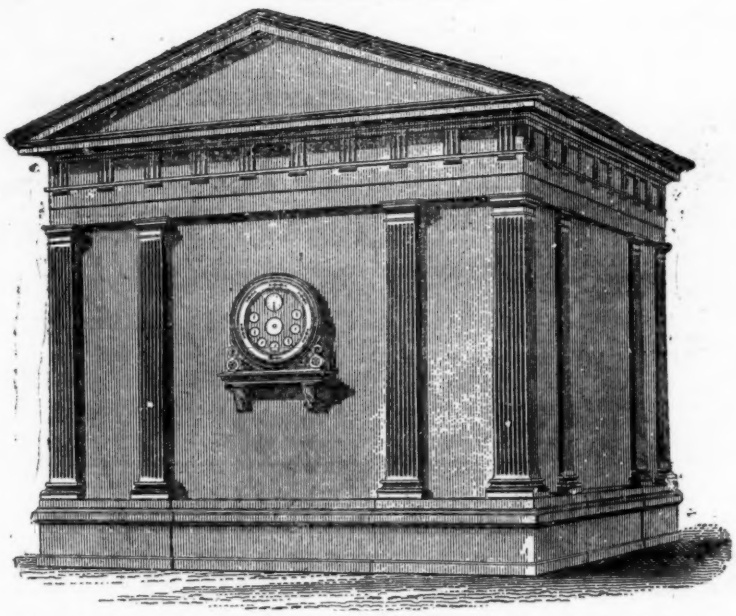
MANUFACTURERS OF

WET & DRY CONSUMERS GAS-METERS

OF THE HIGHEST EXCELLENCE;

ROUND STATION-METERS,

ON CAST-IRON STANDS.



SQUARE STATION-METERS,

WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, MAIN COCKS, &c.

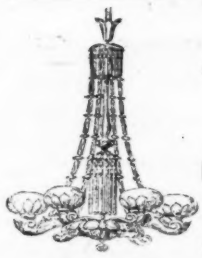
GAS COOKING APPARATUS.

Home and Foreign Orders promptly attended to.

All Sizes of CONSUMERS METERS, STATION-METERS, and GOVERNORS generally in Stock.

Orders almost invariably despatched on the day of receipt.

TERMS, &c., ON APPLICATION.



F. & C. OSLER,

45, OXFORD STREET, LONDON, W.

MANUFACTORY AND SHOW-ROOMS:

BROAD STREET, BIRMINGHAM.

ESTABLISHED 1807.

MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS,

WALL LIGHTS, AND LUSTRES FOR GAS AND CANDLES.

TABLE GLASS OF ALL KINDS.

CHANDELIERS IN BRONZE AND ORMOLU. MODERATOR LAMPS.

GEORGE ANDERSON,

GAS AND CONSULTING ENGINEER,

4, CANNON ROW, PARLIAMENT STREET, S.W.

MR. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.

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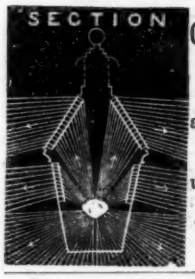

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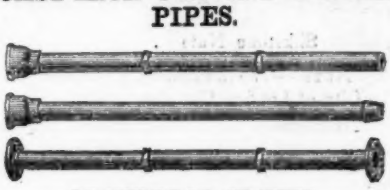

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Analysis by F. J. EVANS, Esq., Chartered Gas Company, Horseferry Road, Westminster:—

(COPY.)

	Cubic Feet of Gas per Ton of Coal.	Illuminating Power in Candles.	Coke per Ton of Coal used.	Ash in Coke, per Cent.	Sulphur in Coal, per Cent.
Silkstone Nuts . . .	10·800	15·85	12·66 cwt.....	6 J	0·69

NOTE.—The illuminating power of the gas was tested by the standard burner now used in London by the Gas Referees, under the City of London Gas Act, 1868.

Horseferry Road, Westminster, March, 1870. (Signed) F. J. EVANS.

These Nuts are extensively used by various Gas Companies throughout the Kingdom, who bear strong testimony to their value.

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1. The following are the practical results given by Dr. Wallace, of Glasgow, of analyses of their Lochore and Capledrae Cannels:—

	Sample worked at Capledrae.	Sample worked at Lochore.
Gas per ton of coal, at 60° Fahr. and 30 inches barometric pressure	13,095 cubic feet.	11,760 cubic feet.
Illuminating power, in standard sperm candles, by union jet consuming 5 cubic feet per hour, at ·5-inch pressure	32·91	34·83
Value of 1 cubic foot of gas in grains of sperm	780	836
Equivalent of a ton of coal in pounds of sperm candles	1,459	1,404
Durability of 1 cubic foot by 5-inch flame	69 minutes.	71 minutes.
Gravity of the gas (air = 1000)	596	594

Remarks.—This (the sample from Capledrae) is a Cannel Coal of first-class quality, giving 13,000 feet of 33-candle gas. It contains only a minute proportion of sulphur, and the ash is almost quite white. The coke is of rather inferior quality.

Remarks on Sample from Lochore.—This is a Cannel Coal of first-class quality, giving a large yield of very rich gas and a coke of medium quality.

2. The following are the practical results of analyses by Dr. Wallace of the Company's Waverley Cannels:—

	Capledrae Waverley.	Lochore Waverley.
Gas per ton of coal, at 60° Fahr. and 30 inches barometer	9,120 cubic feet.	11,145 cubic feet.
Illuminating power, in standard candles, by union jet consuming 5 cubic feet per hour, at ·5-inch pressure	36·62	33·09
Value of 1 cubic foot of gas in grains of sperm	878	794
Equivalent of a ton of coal in pounds of sperm candles	1,145	1,264
Durability of 1 cubic foot of gas by 5-inch flame	80 minutes.	67 minutes.
Gravity of the gas (air = 1000)	677	597

Remarks on the Sample of Capledrae Waverley.—This Coal gives fully 9000 feet of gas of 36½ candles, and is admirably adapted for bringing up the quality of gas made from common coal or inferior qualities of cannel. The tests were made at a rather high temperature, this being one of the coals that stand a very high heat without serious diminution of the illuminating power of the gas The coke contains 60 per cent. of ash, and is therefore almost valueless, but the proportion of sulphur is very moderate.

Remarks on the Lochore Waverley.—This is a first-class Cannel Coal, giving 11,000 cubic feet of 33-candle gas. The quantity of sulphur is very minute, and the ash is nearly white. The coke is of inferior quality, but not wholly valueless.

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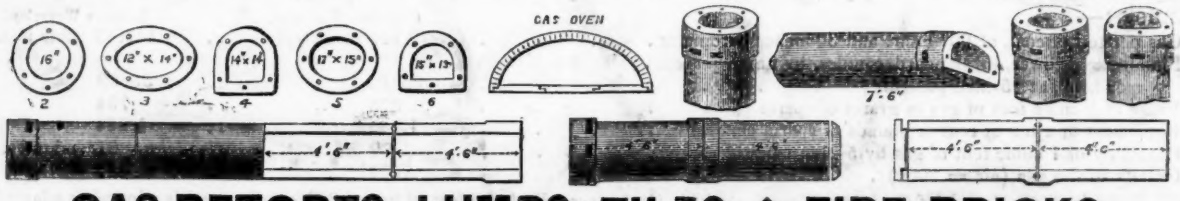

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